

A report of child deaths in Kentucky for
the 2014 calendar year, using data files
from the Public Health Office of Vital
Statistics

Public Health Child Fatality Review Program 2016 Annual Report



Division of Maternal and Child Health
Kentucky Department for Public Health



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Thanks to all members and consultants of the State Child Fatality Review team who volunteer their time and efforts to reviewing this data and reducing child fatalities across the state.

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THE PUBLIC HEALTH CHILD FATALITY REVIEW PROCESS

CHILD FATALITY REVIEW USES SURVEILLANCE TO INFORM PREVENTION EFFORTS

The goal of the Kentucky Department for Public Health's Child Fatality Review (CFR) Program is ultimately to decrease child deaths through prevention efforts. This is done by monitoring aggregate data from vital statistics in order to identify trends and emerging issues related to fatalities that may be preventable in Kentucky. In collaboration with key partners, this data analysis is applied to the development of recommendations and community interventions that may help prevent future injuries and child deaths.

The Kentucky Department for Public Health established the State Child Fatality Review Team through legislation in 1996. In accordance with KRS 211.684, the state team is a voluntary, multidisciplinary body that may assume certain duties, including:

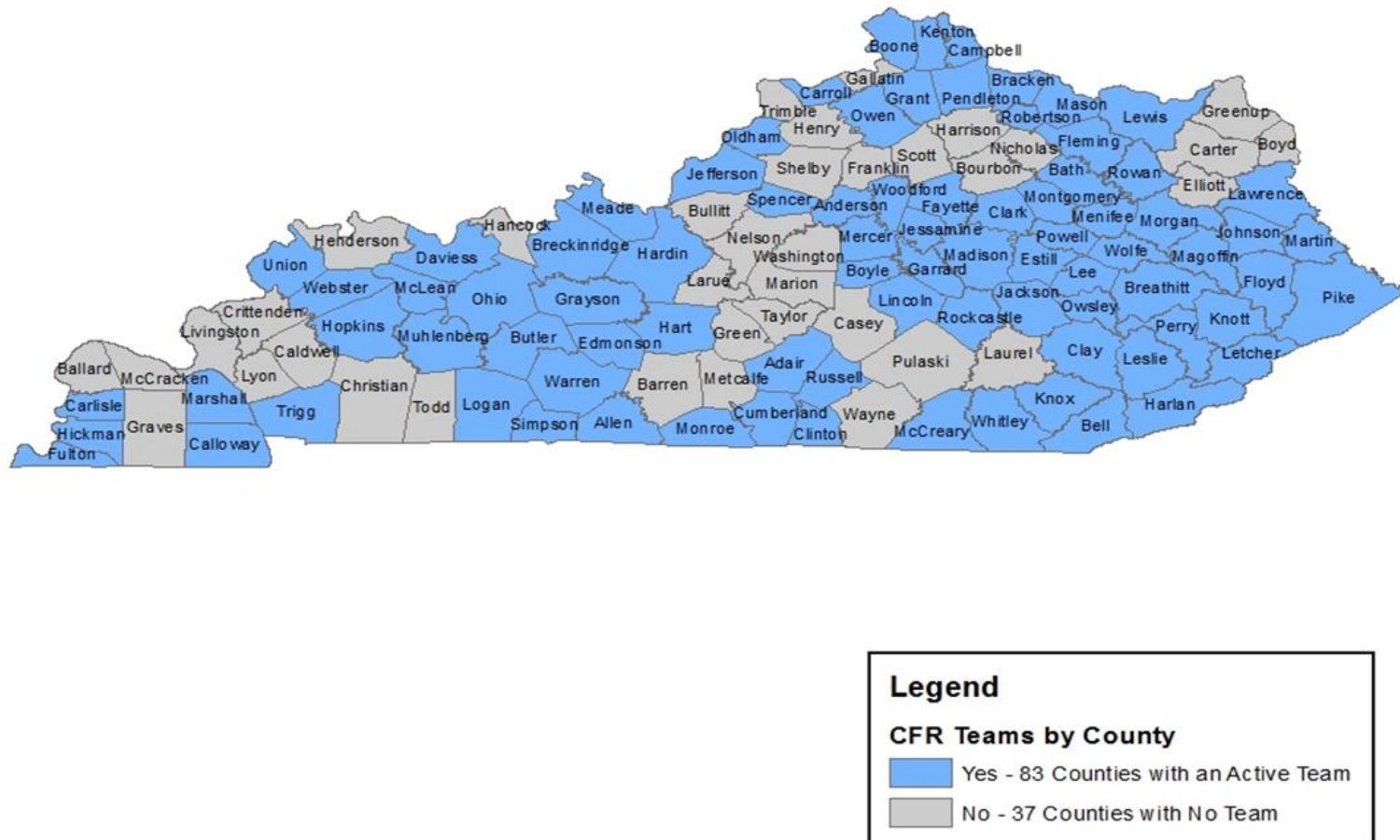
- Facilitating the development of local child fatality review teams, which may include training opportunities and technical assistance;
- Developing and distributing model protocols for local child fatality review teams that investigate child fatalities;
- Reviewing and approving local protocols prepared and submitted by local teams;
- Analyzing data regarding child fatalities to identify trends, patterns and risk factors;
- Evaluating the effectiveness of adopted prevention and intervention strategies; and
- Making recommendations regarding state programs, legislation, administrative regulations, policies, budgets, and treatment and service standards, which may facilitate the development of strategies for the prevention and reduction of the number of child deaths.

The State Child Fatality Review Program supports the State Child Fatality Review team who work to assure a strong child fatality review and injury prevention system throughout Kentucky. Local development of child fatality review teams, who review child deaths at the local level, continues to be one of the most important infrastructure-building responsibilities of the state team. According to KRS 211.686, local child fatality review team composition includes multidisciplinary representation from coroners, law enforcement, health departments, Department for Community Based Services, Commonwealth and county attorneys, medical professionals, and others deemed important by the local team to carry out its purpose.

The local child fatality review team is called together by the coroner to assist in gathering as much information as possible to determine the most accurate manner and cause of a child's death. Team members have the opportunity to share information, discuss and prioritize child health and risk factors, and promote local education and community-based prevention programs. The goal of the program is to have local teams in every county so that local initiatives for injury prevention can be implemented. Currently, 83 counties have an active local child fatality review team (Map 1). The state team reviews all death data collected by the program to identify injury trends occurring in multiple communities and develop strategies that will help save the lives of children across the Commonwealth.

KRS 211.684 requires the State Child Fatality Review Program to prepare an annual report that includes a statistical analysis of the incidence and causes of child fatalities in the Commonwealth and recommendations for action. This report does not include information that would identify specific child fatality cases, but is an analysis of trends in the data with a focus on opportunities for prevention. This 2016 Child Fatality Review Annual Report presents information from vital statistics data on child deaths from calendar year 2014 (the most recent year with completed data from the Kentucky Office of Vital Statistics). The data are still preliminary and numbers could change. The data were reviewed by the State CFR team and recommendations were developed. Although data in this report are through 2014, prevention activities outlined in the report are current.

Local Child Fatality Review Teams as of July 2016



EXECUTIVE SUMMARY

Overview of the 2014 Data

Trends in Deaths Among Kentucky Children

There were a total of 630 deaths among Kentucky children in 2014. Table 1 shows the number of deaths by age group since 2010. There is an increase from 2013; however, this increase is not statistically significant. While the death rate among Kentucky's infants and children has varied from year to year, overall there has been a decreasing trend in deaths from 2010 to 2014 (Chart 1).

Table 1

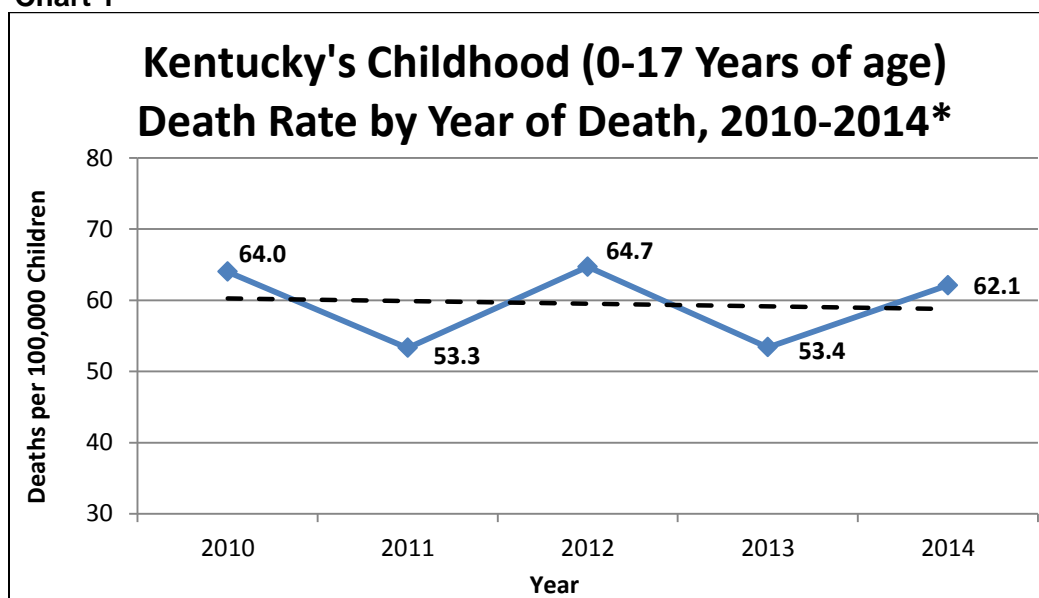
Child Deaths by Age Group and Year, 2010-2014*					
Age Group	2010	2011	2012	2013	2014
Infants	392	339	413	364	417
1-9 Years	119	112	112	95	101
10-17 Years	144	94	133	83	112
Total Number of Deaths	655	545	658	542	630
Childhood Death Rate per 100,000	64.0	53.3	64.7	53.4	62.1

**Note: 2010-2014 data are preliminary and may change.*

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014; Kentucky State Data Center, Population Estimates 2010-2014; Additional infant deaths identified through KY Medicaid Claims Data Warehouse for Years 2010-2014.

The death rate is the number of deaths adjusted for the population of children in the age group. In comparing 2010 to 2014, Kentucky's overall childhood death rate for children birth to 17 years of age has decreased from 64.0 per 100,000 in 2010 to 62.1 per 100,000 in 2014 (Chart 1).

Chart 1



**Note: 2010-2014 data are preliminary and may change.*

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014; Kentucky State Data Center, Population Estimates 2010-2014; Additional infant deaths identified through KY Medicaid Claims Data Warehouse for Years 2010-2014.

EXECUTIVE SUMMARY

Overview of the 2014 Data

Number of Child Deaths by Age

Infant Deaths

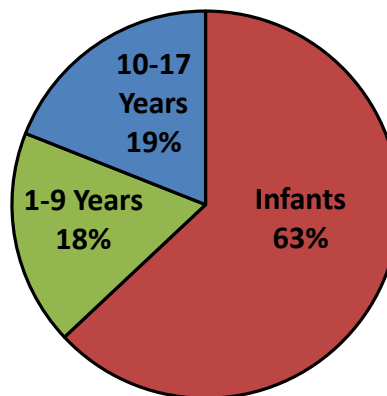
The largest number of child deaths occurs among infants, as illustrated in Chart 2. On average, infant deaths represent 63% of all child deaths in Kentucky for a year. Infant deaths or infant mortality (deaths occurring before the first birthday) totaled 417 for 2014. The majority of infant deaths are from medical conditions such as prematurity, congenital anomalies (birth defects), and Sudden Unexpected Infant Deaths (SUID).

Deaths among Young Children ages 1-9

The total number of deaths for the 1-9 year-old age group has shown no significant changes in the last five years. In a typical year, this age group comprises 18% of all child deaths (Chart 2). In Kentucky, motor vehicle collisions are the leading cause of death among children ages 1-9. Cancer related deaths are the next leading cause of death among children in this age group as seen in Table 2 on page 7. Potentially preventable deaths, such as those from fires, homicides, and drowning, also occur among children ages 1-9, although the numbers of deaths are small and vary from year to year.

Chart 2

Percentage of Kentucky Childhood Deaths by Age Group for a Typical Year*



***Note:** A typical year is determined by taking the average number of deaths for each age group by cause for 2010 through 2014 combined; **2010-2014 data are preliminary and may change.**

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014; Additional infant deaths identified through KY Medicaid Claims Data Warehouse for Years 2010-2014.

Deaths among 10-17 Year-Olds

Deaths among children ages 10-17 years have decreased since 2010. In a typical year, 19% of all child deaths occur among children ages 10-17 years. Motor vehicle collisions remain the leading cause of death among Kentucky's children 10-17 years of age. The second leading cause of death in 2014 among this age group was suicide. Motor vehicle collisions and suicide are both potentially preventable and will be explored later in this report.

TAKING A CLOSER LOOK

Causes of Death by Age Group

Causes of Death by Age Group

In order to analyze the leading causes of death by age, the number of child deaths from the past five years (2010-2014) was utilized to determine the average occurrence in each cause category by age group in Kentucky for a typical year. The numbers are provided in Table 2.

Kentucky mirrors the nation in that the majority of all child deaths (0-17 years) occur among infants (children under the age of 1). The majority of these infant deaths are classified as non-injury and are related to prematurity and other medical conditions. The three leading causes of infant deaths in a typical year are prematurity related conditions, Sudden Unexpected Infant Death (SUID) and birth defects, respectively (Table 2). The number of SUID cases has now surpassed the number of deaths due to birth defects and is approaching the number of deaths due to prematurity among Kentucky infants. This is highly concerning because SUID deaths have the most potential for prevention. The majority of deaths among children older than 1 year of age are injury related. These deaths are significant as they also have the potential to be prevented. Motor vehicle collision deaths are the most common cause of death for children ages 1-9 and 10-17.

Table 2

Average Leading Causes of Death among Kentucky's Children by Age Group for a Typical Year*				
Cause of Death	Infants	1-9 Years	10-17 Years	Total
Prematurity Related Conditions [†]	95	0	0	95
Birth Defects	81	9	4	94
SUID ^α	87	0	0	87
Motor Vehicle Collision	1	16	31	48
Perinatal Conditions	50	2	0	52
Circulatory Disease	10	3	6	19
Cancer	1	12	13	26
Disease of the Nervous System	6	6	6	18
Homicide	5	6	6	17
Suicide	0	0	14	14
Disease of the Respiratory System	8	5	2	15
Drowning	1	9	3	13
Fire	0	8	2	10
Suffocation	1	3	3	7
Infectious Disease	6	4	2	12
Metabolic Disorder	5	4	4	13
Poisoning	1	2	2	5
Undetermined	0	3	1	4
Other [∞]	20	15	14	49

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014 **Note:** 2010-2014 data are preliminary and may change.

NOTE: INFANT DEATHS IDENTIFIED THROUGH MEDICAID CLAIMS WERE EXCLUDED FROM ANALYSIS BECAUSE OF MISSING CAUSE OF DEATH

*Note: A typical year is determined by taking the average number of deaths for each age group by cause for 2010 through 2014 combined.

†Note: Prematurity related deaths are those where the infant was born before 37 weeks gestation with the cause of death assigned to one of the following ICD-10 codes: P000, P010, P011, P015, P020, P021, P027, P070-73, P102, P220-29, P250-79, P280, P281, P360-369, P520-23, P77, and K550.

αNote: SUID Category includes only deaths to infants (<1 year of age) where the cause of death was coded as SIDS (R95), Accidental Suffocation in Bed (W75), Undetermined (R99), Other specified threats to breathing (W83), and Unspecified threat to breathing (W84).

∞Note: Other includes causes of death that varied over the time period and did not have enough data to qualify for a leading cause category.

TAKING A CLOSER LOOK

Categories of Child Deaths

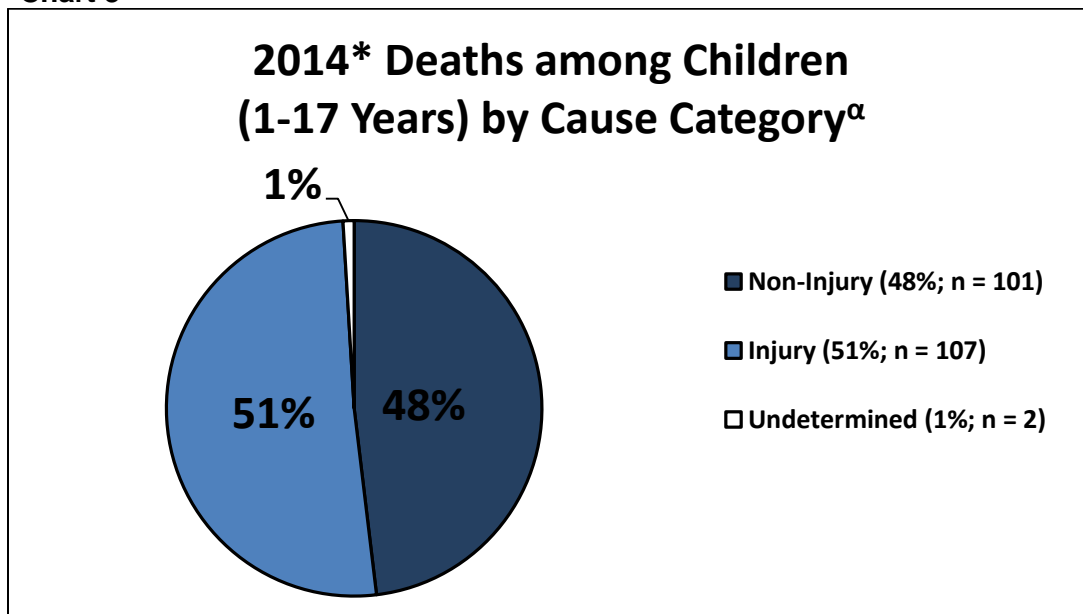
The Two Major Categories of Childhood Deaths

The Centers for Disease Control and Prevention (CDC) group deaths into two major categories, injury or non-injury, according to the cause of death.

- **Non-Injury Deaths** include causes of death that are the result of natural processes such as disease, prematurity, or congenital anomalies (birth defects). Non-Injury deaths accounted for 48% of deaths in Kentucky children ages 1-17 in 2014 (Chart 3). Non-injury deaths among ages 1-17 years include cancer and other medical conditions, such as infectious diseases and digestive and respiratory disorders. Non-injury deaths are less likely to be preventable than injury related deaths.
- **Injury Deaths** include motor vehicle collisions, drowning, homicide, suffocation, fire, and others. A major focus of this report is on injury deaths because they are potentially preventable. In Kentucky, injury deaths accounted for 51% of all deaths among 1-17 year olds in 2014 (Chart 3). Injuries can be unintentional (accidental) or intentional (non-accidental). The category of intentional injury includes deaths from homicide (including child abuse) and suicide. The category of unintentional injury includes motor vehicle collisions, suffocation, drowning, and fire. Unintentional injury can also occur from falls, exposures to chemicals, or forces of nature. According to the CDC, unintentional injury is the leading cause of death from age 1 until age 44 (Richmond-Crum, Joyner, Fogerty, Ellis, & Saul, 2013).

Injury related causes of death have historically accounted for the majority of deaths among children 1-17 years of age. However, in recent years, injury deaths and non-injury deaths are occurring at approximately the same rate among Kentucky children. This shift is primarily due to a decrease in the number of injury deaths. For example, in 2006 there were a total of 148 injury deaths (data not shown) and in 2014 there were 107 injury deaths, which is a 28% decrease in injury deaths among Kentucky's children 1-17 years of age.

Chart 3



NOTE: 3 CHILD DEATHS WERE EXCLUDED FROM ANALYSIS BECAUSE OF MISSING CAUSE OF DEATH.

*Note: 2014 data are preliminary and may change.

^aNote: Data based on 20 or fewer deaths ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2014.

TAKING A CLOSER LOOK

Racial Disparities in Child Deaths

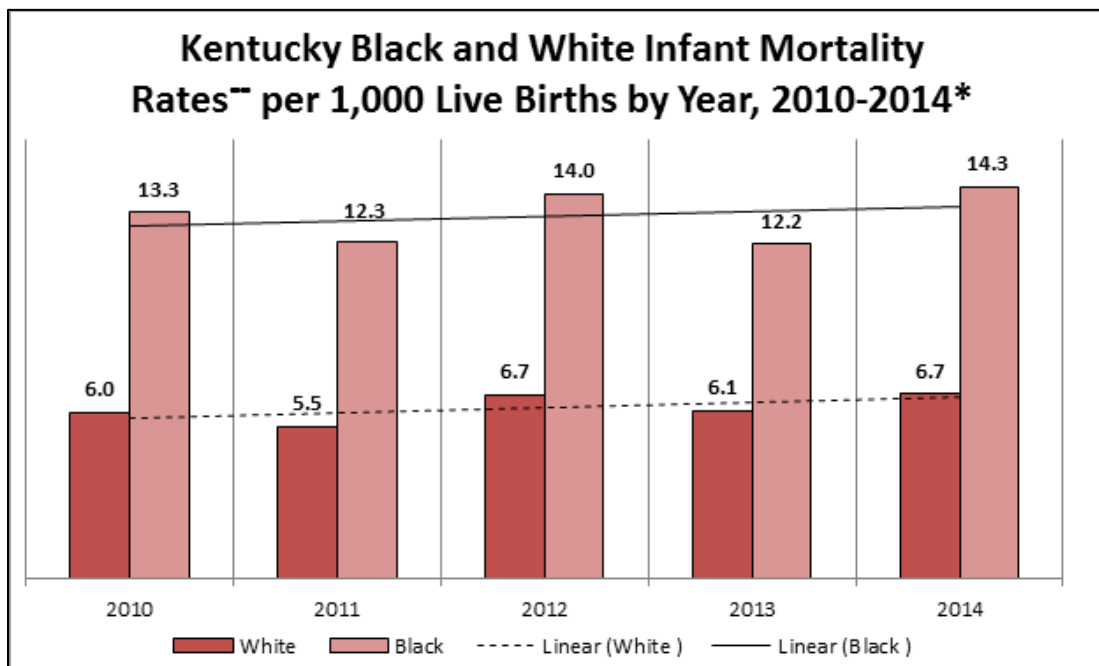
Racial Disparities in Child Fatalities

Across the US, there are disparities in the death rate among black children and white children. In Kentucky as well as the nation, infant deaths are a major component of racial disparity among all childhood deaths.

Disparities in Infant Mortality. Nationally, black infants die at twice the rate as white infants in all major cause categories: preterm birth, SUID, and birth defects. One of the biggest disparities nationally is found in deaths due to low birth weight, from which black infants die at nearly three times the rate as their white counterparts (MacDorman & Mathews, 2011). Preterm birth is another leading cause of infant mortality in which disparities exist as preterm birth and related complications accounted for 42.5% of non-Hispanic black infant deaths compared to 30.8% of non-Hispanic white infant deaths in 2010 (March of Dimes, 2015).

In Kentucky, black infants continue to be twice as likely to die as white infants (Chart 4). Kentucky's 2014 infant mortality rate for white infants was 6.7 per 1,000 live births, while the rate for black infants was 14.3 per 1,000 live births (Chart 4). While both black and white infant mortality rates show a slight increasing trend, the black to white infant mortality ratio for Kentucky has stayed relatively consistent over time. This disproportionate burden reveals the need for prevention efforts to be targeted towards Kentucky's black infant population.

Chart 4



[™]**Note:** Only Black and White Infant Mortality Rates are presented. All other races are excluded so rates presented do NOT equal Kentucky's overall Infant Mortality Rates.

***Note:** 2010-2014 data are preliminary and may change.

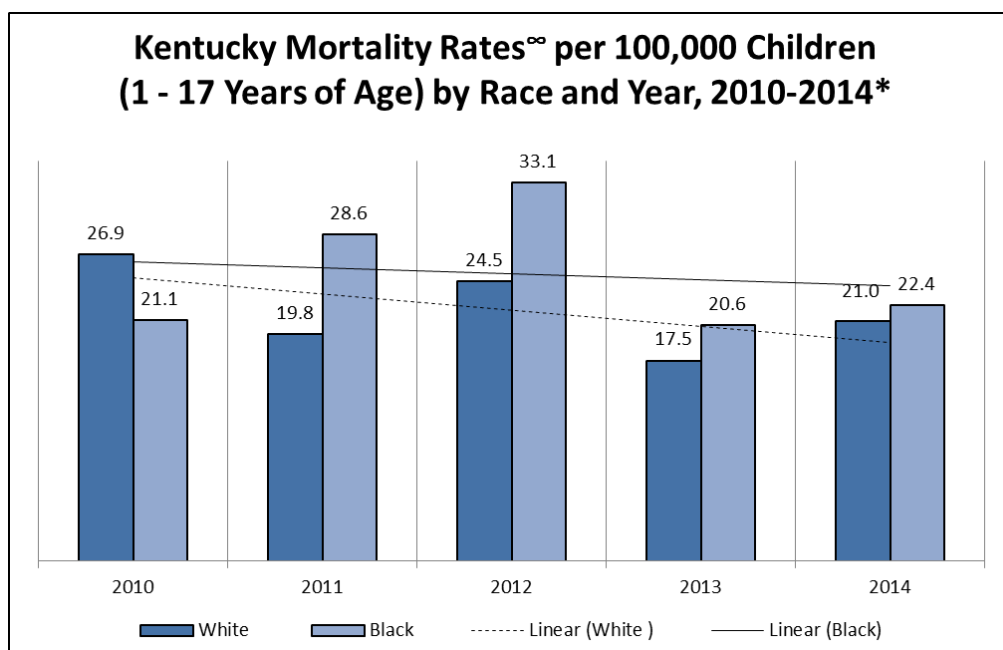
Data Source: Kentucky Vital Statistics, Birth Certificate Files 2010-2014 and Death Certificate Files 2010-2014.

TAKING A CLOSER LOOK

Racial Disparities in Child Deaths

Disparities in Child Deaths (ages 1-17). Although the gap in racial disparity is not as great among Kentucky children ages 1 to 17 years as it is among Kentucky's infants, the racial disparity is still present. From 2010-2014, Kentucky's child mortality rate indicates a slightly decreasing trend among both black and white children (Chart 5). The progress in decreasing child mortality has been greater for white children than for black children, but overall both are declining and the racial disparity in child deaths is decreasing in Kentucky. In 2011, deaths among black children occurred 1.4 times more often than deaths among white children, but in 2014 deaths among black children occurred at nearly the same rate as deaths among white children (1.1).

Chart 5



***Note:** Only Black and White Infant Mortality Rates are presented. All other races are excluded so rates presented do NOT equal Kentucky's overall Child Mortality Rates.

***Note:** 2010-2014 data are preliminary and may change.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014; Kentucky State Data Center, Population Estimates by Race 2010-2014.

Of note, the five leading causes of death among Kentucky white children (1-17 years) in 2014 were motor vehicle collisions, cancer, diseases of the nervous system, suicide, and metabolic disorders, respectively. However, the five leading causes of death among black children were homicide, motor vehicle collisions, drowning, cancer, and diseases of the nervous system, respectively. In 2014, deaths due to homicide occurred among Kentucky's black children nearly five times the rate of homicide deaths among white children. This statistic highlights the need for increased efforts in violence prevention.

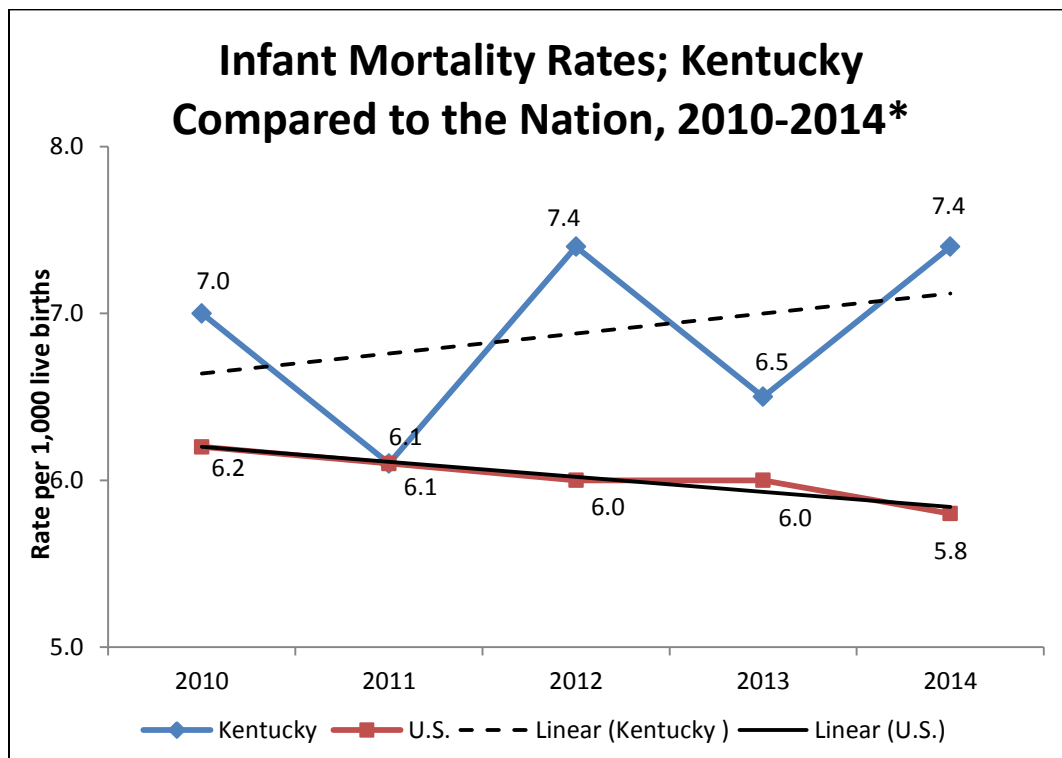
INFANT DEATHS/ INFANT MORTALITY

Kentucky's Infant Mortality Remains High

The infant mortality rate (IMR) is the number of infant deaths for every 1,000 live births and is seen as the best indicator of a state's overall health, social, and economic environment. Kentucky's infant mortality rate has, for many years, been close to the national average. However, recently the infant mortality rate in Kentucky is demonstrating an increase. Kentucky's most current infant mortality rate is 7.4 per 1,000 live births (2014), while the U.S. rate is much lower at 5.8 per 1,000 live births (Chart 6). Although the data is preliminary, this adverse trend is concerning.

There are multiple factors influencing the state's infant mortality rate. Nationally, Kentucky has one of the highest rates of smoking during pregnancy, which can cause miscarriage, premature birth, and/or low birth weight and is associated with an increased risk of birth defects (Centers for Disease Control and Prevention, 2014c). Smoking, both during pregnancy and in the home after birth, increases the risk of Sudden Infant Death Syndrome (SIDS) (Centers for Disease Control and Prevention, 2014c).

Chart 6



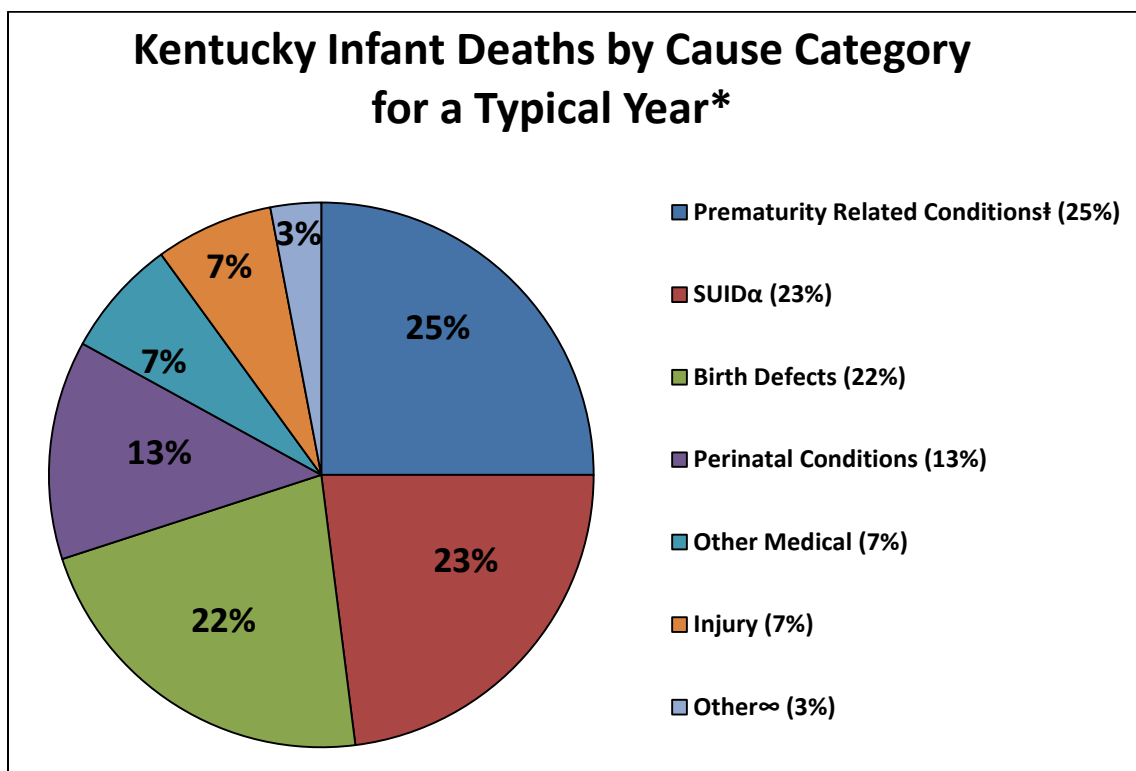
***Note: 2010-2014 data are preliminary and numbers could change.**

Data Source: KY Vital Statistics Files, Death Certificate files, Years 2010-2014; Additional infant deaths identified through KY Medicaid Claims Data Warehouse for Years 2010-2014; National Center for Health Statistics, Deaths Final Data 2014.

Infant Deaths/ Infant Mortality

The three leading causes of infant death in Kentucky are prematurity related conditions, Sudden Unexpected Infant Death (SUID), and birth defects (Chart 7). Since infant deaths comprise over half of all childhood deaths, the three leading causes of death among infants are also the three leading causes of death among all children.

Chart 7



***Note:** A typical year is determined by taking the average number of deaths for each age group by cause for 2010 through 2014 combined; **2010-2014 data are preliminary and numbers could change.**

†Note: Prematurity related deaths are those where the infant was born before 37 weeks gestation with the cause of death assigned to one of the following ICD-10 codes; P000, P010, P011, P015, P020, P021, P027, P070-73, P102, P220-29, P250-79, P280, P281, P360-369, P520-23, P77, and K550.

‡Note: SUID Category includes only deaths to infants (<1 year of age) where the cause of death was coded as SIDS (R95), Accidental Suffocation in Bed (W75), Undetermined (R99), Other specified threats to breathing (W83), or Unspecified threat to breathing (W84).

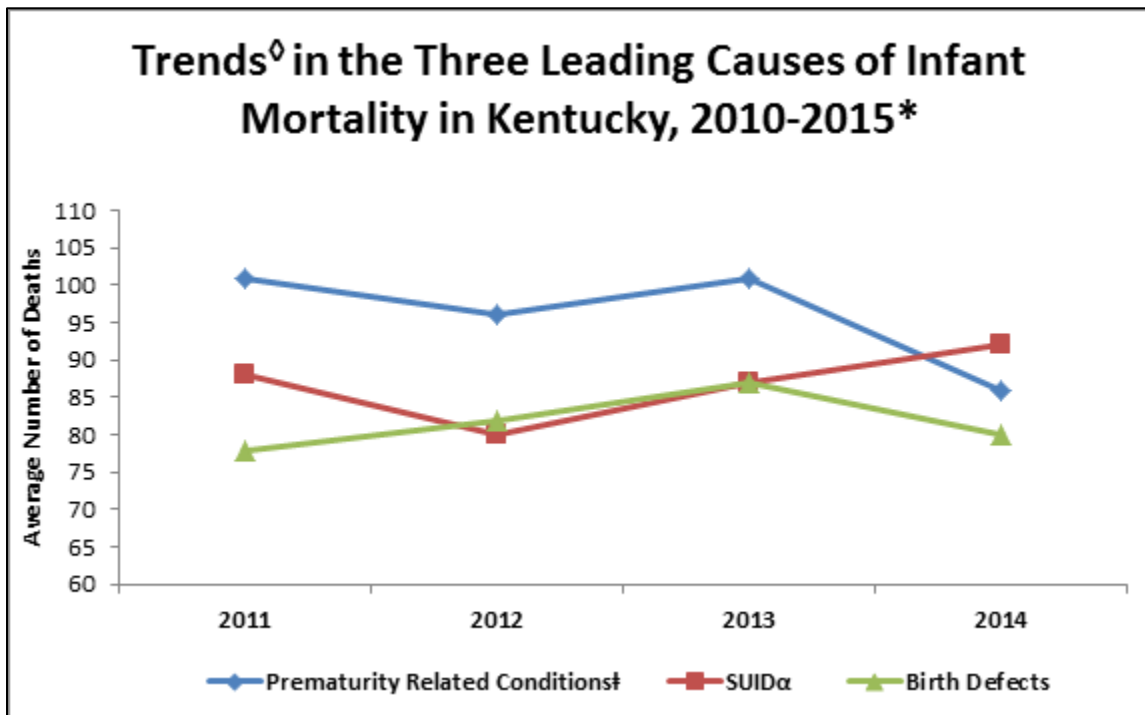
∞Note: Other includes causes of death that varied over the time period and did not have enough data to qualify for a leading cause category.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014.

Infant Deaths/Infant Mortality

In Chart 8, which depicts a rolling three year average, it now appears that in Kentucky SUID has, for the first time, surpassed prematurity related deaths. However, it is important to note that some of the data is preliminary and numbers may change. Kentucky differs in this trend from the national data, where SUID remains the 3rd leading cause of infant death.

Chart 8



***Note: 2010-2015 data are preliminary and may change**

†Note: Prematurity related deaths are those where the infant was born before 37 weeks gestation with the cause of death assigned to one of the following ICD-10 codes; P000, P010, P011, P015, P020, P021, P027, P070-73, P102, P220-29, P250-79, P280, P281, P360-369, P520-23, P77, and K550.

°Note: A three-year rolling average has been plotted to present the trend in Kentucky's three leading causes of death from 2010-2015. Therefore, the data point at 2011 is really a yearly average of 2010, 2011, and 2012, the data point for 2012 is the yearly average of 2011, 2012, and 2013, and 2013 is 2012, 2013, and 2014 and so on and so forth. This three-year rolling average method increases the case counts per data point, which can improve the stability of the estimates. The result is that the rates are somewhat smoothed and less likely to be skewed by outliers.

αNote: SUID Category includes only deaths to infants (<1 year of age) where the cause of death was coded as SIDS (R95), Accidental Suffocation in Bed (W75), Undetermined (R99), Other specified threats to breathing (W83), and Unspecified threat to breathing (W84).

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2015.

INFANT DEATHS/ INFANT MORTALITY

Prematurity Related Deaths

Prematurity Related Deaths

Pregnancy gestation, the time for the baby to develop before birth, normally lasts 38-41 weeks for humans. Births that occur before 37 weeks gestation are preterm or premature. Births at 37 and 38 weeks are early term, while those at 39 weeks or greater are full term. Prematurity related deaths are the most common cause of death for Kentucky infants. The CDC reported that preterm births in 2015 affect 9.6% of all babies born in the U.S. (Centers for Disease Control and Prevention, 2014b; Hamilton, Martin, Osterman, Curtin, & Matthews, 2015). In Kentucky, 12.6% of all births are premature. The earlier the baby is born, the higher the risk of disability or death. The CDC reported that as gestational age increases, the rate of infant mortality will decrease (Centers for Disease Control and Prevention, 2014b). However, being born premature, even by just a few weeks, can increase the risk of death and complications. Because complications are higher and double the risk for every week the infant is born before the due date, infants should not be delivered prior to 39 weeks of gestation without a medical indication.

Common factors that increase the likelihood for preterm birth include: infections, poor nutrition, lack of socio-economic resources, domestic violence, smoking during pregnancy, substance abuse, and medical disorders (Centers for Disease Control and Prevention, 2014b). The identification of risk factors for poor outcomes is critical to minimizing infant mortality and morbidity. Access to care for the mother before, during, and after pregnancy is critically important for prematurity prevention and positive outcomes for both mother and child. Early access to prenatal care, the identification of high risk pregnancy conditions, and preventative counseling are essential in the improvement of perinatal outcomes. Prenatal care is a key strategy in the prevention of maternal and infant morbidity and mortality and in promoting health and well-being of infants through adulthood. Addressing social determinants of health has emerged as a key strategy to improve birth outcomes and reduce disparities.

INFANT DEATHS/ INFANT MORTALITY

Sudden Unexpected Infant Deaths

Sudden Unexpected Infant Deaths in Kentucky

Typically, people know sudden unexpected infant death as SIDS, or Sudden Infant Death Syndrome. The CDC defines SIDS as the sudden death of an infant less than one year of age that cannot be explained after a thorough investigation has been conducted, including a complete autopsy, examination of the death scene, and review of the clinical history. However, with advances in medicine and better data available on infant deaths, the CDC has now broadened the focus on infant sleep-related deaths to include not only SIDS, but also accidental suffocation in bed and “undetermined.” These deaths typically occur while the infant is sleeping and are now classified under the designation of SUID. According to the CDC, it may be difficult to separate SIDS from other types of sudden unexpected infant deaths. Differentiating accidental suffocation in bed from SIDS, even when a thorough investigation is conducted, can be challenging. At least some SUID cases are potentially preventable by implementing safe sleep practices. Another challenge for Kentucky that contributes to increasing SUID cases is smoking during pregnancy. In a national study, 23%-34% of deaths due to SIDS were attributable to smoking in pregnancy (Dietz et al., 2010), so the high rates of smoking in Kentucky place our infants at increased risk.

Using the broader category of SUID, these infant deaths are the second leading cause of death among Kentucky’s infants. SUID cases have increased from 83 in 2013 to 93 in 2014 (Table 3), and preliminary data for 2015 reveals an increase to 98 cases (data not shown). The proportion of these cases with at least one risk factor present has also increased since last year. In nearly 50% of these SUID cases, the infant was sleeping on a surface not designed for infant sleep, there were hazards in the sleep area, or the infant was sharing the same sleep surface with another person.

Table 3

Number of SUID^a Cases by Type and Presence of Risk Factors^{*,†}, 2010-2014*					
	2010	2011	2012	2013	2014
Type of SUID Death					
SIDS	63	49	45	55	57
Undetermined	22	12	10	20	22
Asphyxia [‡]	21	12	16	9	11
Total Number of SUID Deaths	106	74	69	83	93
Sleep-Related Risk Factors Present					
Sharing sleep surface at time of death	62	41	33	46	47
Surface not designed for infant sleep	73	50	40	56	67
Hazards in Sleep Area	20	30	32	48	52
Sleep Position (Prone or On-Side)	25	25	23	22	30
At Least One Risk Factor Present	89	63	56	75	89

^a**Note:** SUID Category includes only deaths to infants (<1 year of age) where the cause of death was coded as SIDS (R95), Accidental Suffocation in Bed (W75), Undetermined (R99), Other specified threats to breathing (W83), or Unspecified threat to breathing (W84).

^{*}**Note:** Categories under the Sleep-Related Risk Factors are not mutually exclusive.

^{*}**Note:** 2010-2014 data are preliminary and may change.

[‡]**Note:** Asphyxia includes deaths where the cause of death was coded as Accidental Suffocation in Bed (W75), Other specified threats to breathing (W83), and Unspecified threat to breathing (W84).

Data Source: Kentucky Vital Statistics, Death Certificate File 2010-2014; Coroner’s Reports; Child Fatality Review Team Reports; and Kentucky Medical Examiner’s Reports, 2010-2014.

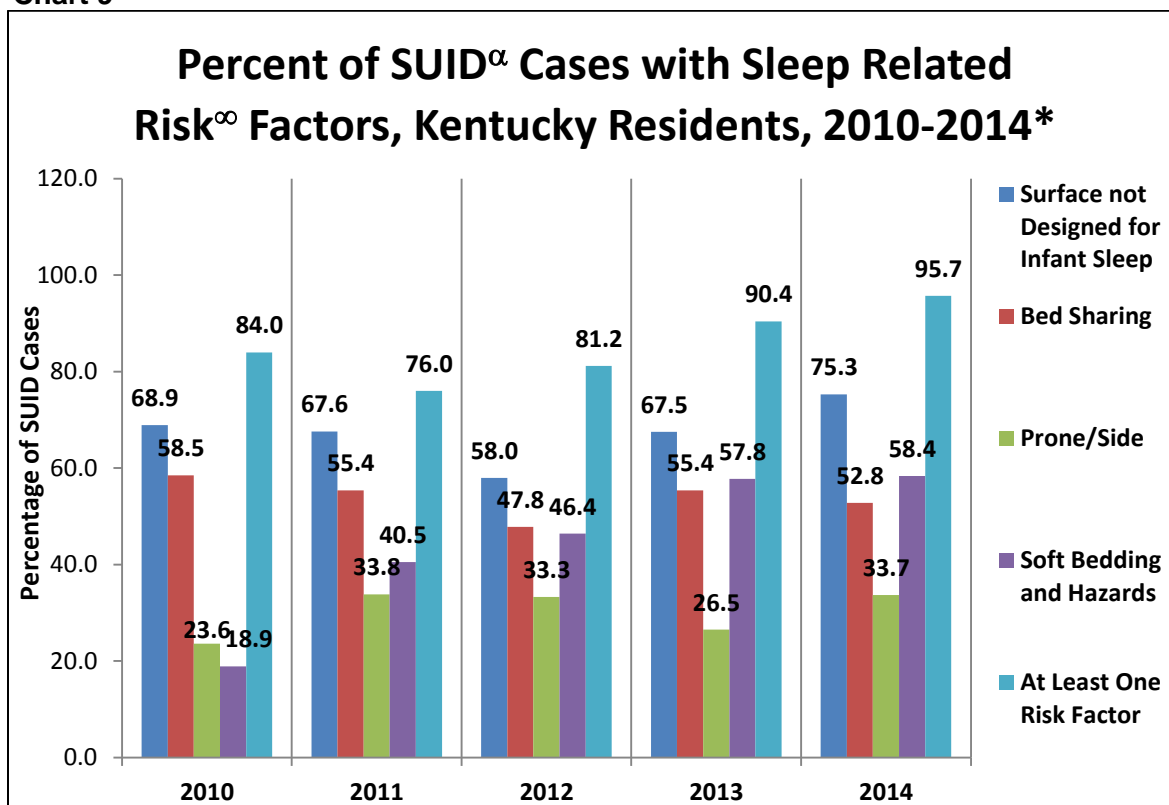
INFANT DEATHS/ INFANT MORTALITY

Sudden Unexpected Infant Death

Sleep-Related Risk Factors are Present in Almost All of SUID Cases

Kentucky's data from 2014 shows that nearly 96% of the deaths had documentation of at least one sleep-related risk factor. In fact, there are often two or more hazardous risk factors present for every death due to SUID. Common risk factors found in sleep-related deaths are: child not put to sleep on their back (placed on stomach or side position instead); child sleeping on a surface not designed for infant sleep (adult bed, sofa, recliner, etc.); sharing a sleep surface (bed, sofa) at the time of death with an adult or another child; hazards (pillows, blankets, bumper pads, and stuffed animals) in the sleep area; and smoking in the home.

Chart 9



^αNote: SUID Category includes only deaths to infants (<1 year of age) where the cause of death was coded as SIDS (R95), Accidental Suffocation in Bed (W75), Undetermined (R99), Other specified threats to breathing (W83), or Unspecified threat to breathing (W84).

[∞]Note: Categories under the Sleep-Related Risk Factors are not mutually exclusive.

*Note: 2010-2014 data are preliminary and may change.

Data Source: Kentucky Vital Statistics, Death Certificate File 2010-2014; Coroner's Reports; Child Fatality Review Team Reports; and Kentucky Medical Examiner's Reports, 2010-2014.

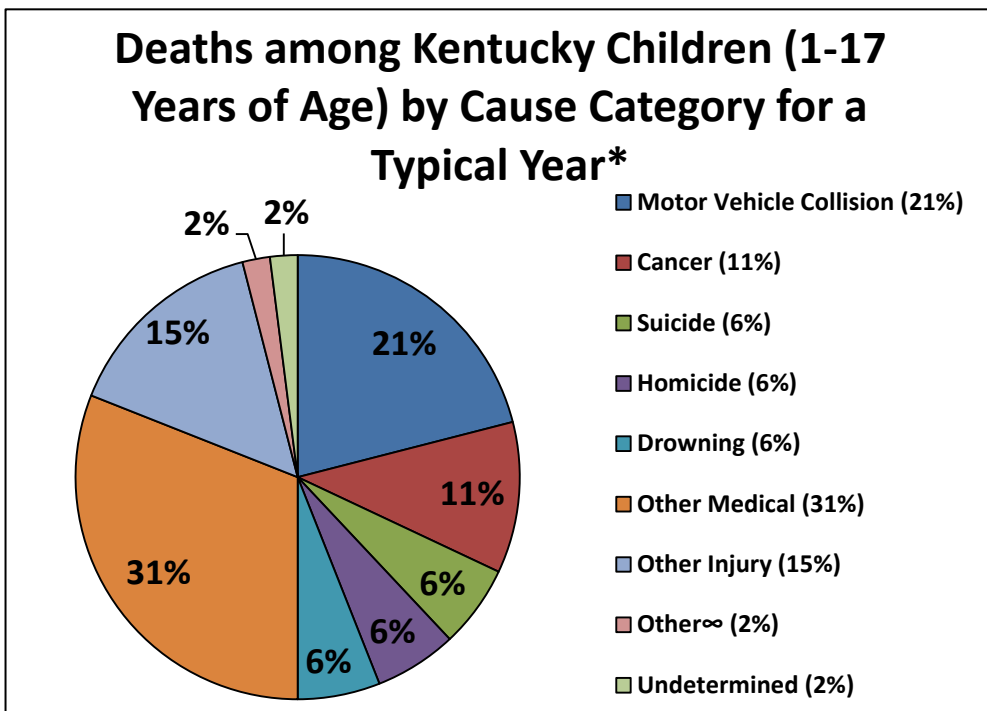
Looking at the data from 2010, the "back to sleep" message was effective with over 75% of infants being placed on their back to sleep. In recent years, an increasing number of infants who died were not put on their backs for sleep, a dangerous trend that hopefully can be modified with education. The percentage of SUID cases with the risk factor of soft bedding has also increased since 2010. Surfaces not designed for infant sleep were present in three of four SUID cases in 2014. While many people do not see the dangers of sharing a sleep surface with an infant, it is significant that over half of the SUID cases have this documented as a risk factor. Prevention efforts focusing on safe sleep and reducing known risks are occurring across the state. Educating parents and caretakers about safe sleep, as well as modeling safe sleep in hospital settings, are key strategies in reducing SUID.

Injuries Account for Most Deaths in Children Ages 1-17

The CDC reports that injury is the number one killer of children and teens (Centers for Disease Control and Prevention, 2013). Although child injury death rates have decreased 29% nationally in the last decade, injury remains a major under-recognized public health problem facing our country today (Richmond-Crum, et al., 2013).

The most common cause of injury death among children ages 1-17 is motor vehicle collisions, which account for approximately 21% of all childhood deaths in Kentucky (Chart 10). There are smaller proportions of deaths due to homicide, suicide, and drowning among this same age group. Injury deaths, whether unintentional or intentional, may be preventable.

Chart 10



The “other” category presented in Chart 10 includes deaths in which the causes were unknown. Two additional “other” categories (Other Medical and Other Injury) were created to capture causes of death that vary over time and do not occur with high frequency. Some causes of death that are grouped into the “other medical” category include: infectious disease, heart disease, metabolic disorders, etc. Fire and other external causes are included in the “other injury” category and are typically not leading causes of death among Kentucky’s children 1 to 17 years of age.

***Note:** A typical year is determined by taking the average number of deaths for each age group by cause for 2010 through 2014 combined; **2010-2014 data are preliminary and numbers could change.**

***Note:** Other includes causes of death that varied over the time period and did not have enough data to qualify for a leading cause category.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014.

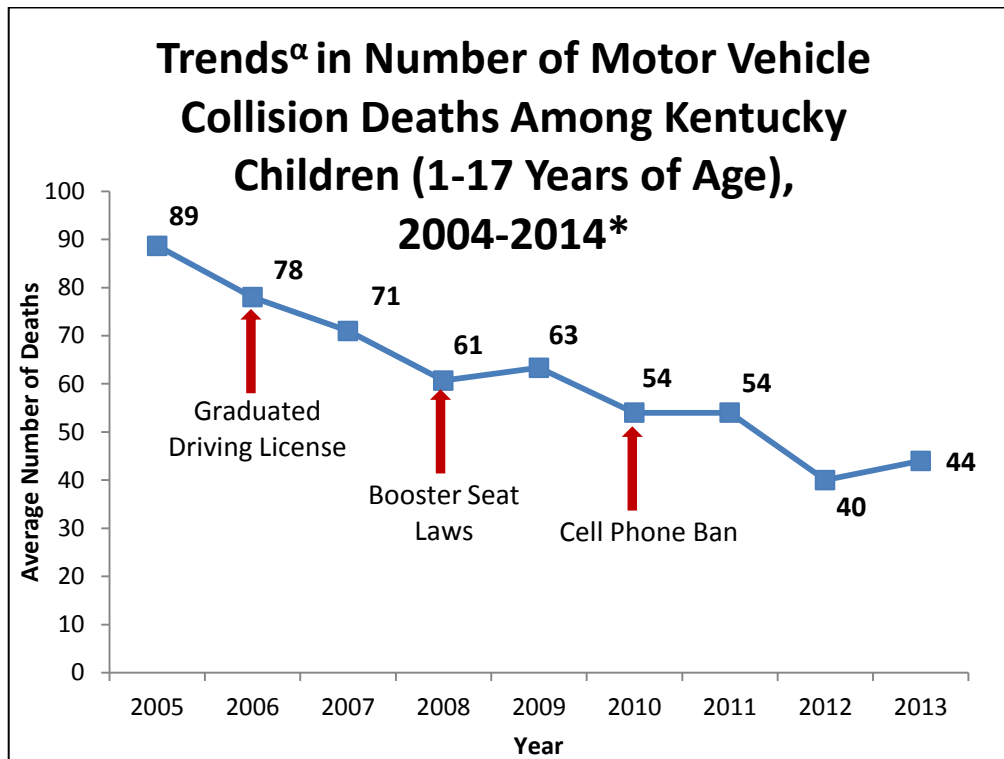
DEATHS IN CHILDREN (AGE 1-17)

Motor Vehicle Collisions

Motor Vehicle Collisions are the Leading Cause of Death in Children Ages 1-17

Motor Vehicle Collision (MVC) deaths include fatal injuries from being the driver or passenger of a motor vehicle involved in a crash or from being struck by, or falling off of, a moving vehicle. Motor vehicle collisions remain the leading cause of injury-related death in Kentucky for children aged 1-17 years.

Chart 11



Kentucky child deaths related to motor vehicle collisions have seen a steady decline since 2004, as depicted on Chart 11. Similarly, The National Highway Traffic Safety Administration (NHTSA) reported that from 2003 to 2013 the number of fatalities nationally in the under-14 year age group decreased by 45% (National Highway Traffic Safety Administration, 2014).

Initiatives such as the graduated driving license law, booster seat law, and the cell phone ban for teen drivers are noted on Chart 11 and have been recognized as factors influencing this decrease.

DEATHS IN CHILDREN (AGE 1-17)

Motor Vehicle Collisions

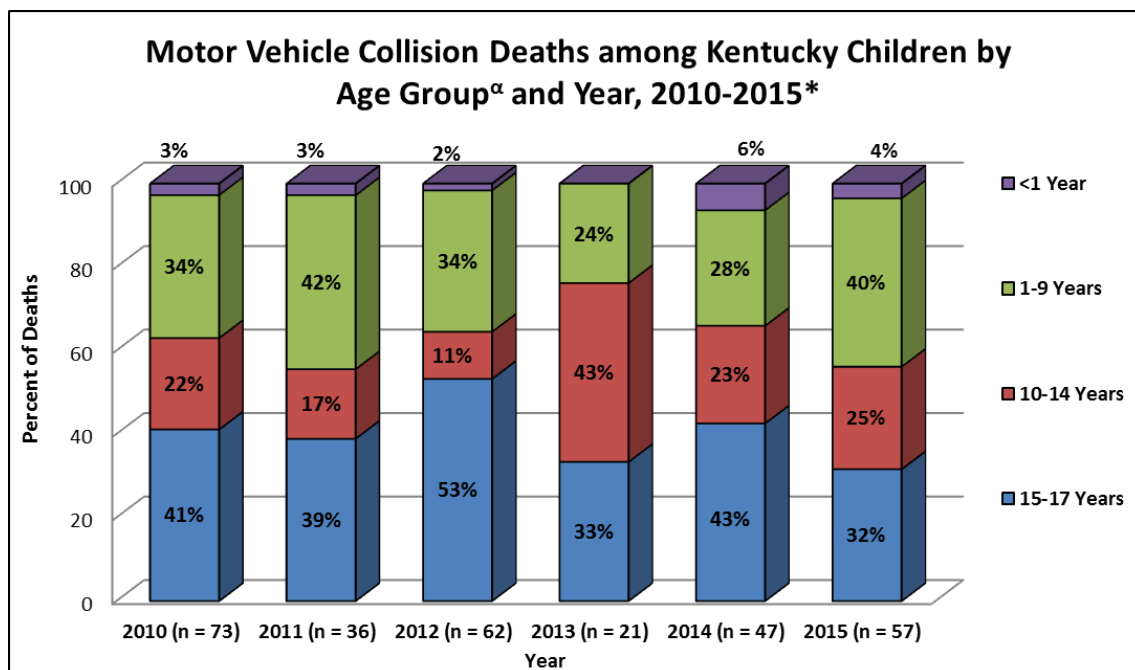
Child Deaths from Motor Vehicle Collision

In Kentucky during 2014, children aged 1 to 9 years (car and booster seat ages) comprised 28% of the motor vehicle deaths (Chart 12). KRS 189.125 currently requires booster seats for children under the age of eight (8) years who are between forty (40) inches and fifty-seven (57) inches in height. At age 9, the decision should be made on an individual basis whether the seat belt fits the child correctly without a booster seat, since almost no child has achieved adult height by age 9. Correctly used child safety seats can reduce the risk of death by as much as 71% (Safe Kids Worldwide, 2013b).

In Kentucky, the 2014 data shows that children aged 10 to 14 years (Chart 12) accounted for 23% of the total child motor vehicle collision deaths. Children within this age range should be appropriately buckled and should continue to ride in the back seat at least through age 12.

There was an increase in motor vehicle collision deaths from 2013 to 2014, and preliminary data for 2015 shows that deaths due to motor vehicle collisions may be on the increase again. However, it is too soon to tell if this is a true increase or a fluctuation within the data; the State CFR program will continue to monitor this trend.

Chart 12



Due to Rounding, Numbers may not Equal 100%

^a**Note:** There was no statistically significant difference in the percentage of deaths for each age group for 2015 compared to previous years; Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.**

***Note:** 2010-2015 data are preliminary and may change.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2015.

DEATHS IN CHILDREN (AGE 1-17)

Motor Vehicle Collisions

Since 2011, the NHTSA and the American Academy of Pediatrics (AAP) have made the following recommendations for child passenger safety:

- Infants and toddlers should ride in a rear-facing car seat until age 2 or until he/she reaches the top height or weight limit allowed by the car seat manufacturer.
- Once a child outgrows the rear-facing car seat, he/she is ready to travel in a forward facing car seat with a harness.
- When a child is too tall for that car seat or too heavy for the harness weight specified by the manufacturer, he/she should graduate to a belt-positioning booster seat.
- For safest travel, a child should remain in a booster seat until he/she is big enough to fit in an adult seat belt properly, with the lap belt lying snugly across the thighs and shoulder belt snug across the collarbone (usually between the ages of 8-12 years).
- For greatest safety, parents are also advised to avoid advancing to the next phase prematurely and to wait until the size of the child dictates the need to transition into the next phase.
- Children should ride in the back seat at least through age 12 (American Academy of Pediatrics, 2015).



Teen Driver Deaths Account for 43% of Motor Vehicle Collision Deaths

For the year 2014, 43% of Kentucky child deaths due to motor vehicle collisions occurred among teenagers 15-17 years of age (Chart 12). Current efforts in Kentucky to reduce the number of deaths of young drivers include the graduated driver's license initiative, a cell phone ban for drivers under 18, and driver safety programs that address risk factors for youth drivers. Common patterns are seen between the fatal collisions among Kentucky's teens (15-17 years of age) and others across the nation. Preliminary data shows the number of motor vehicle collisions for 2015 has increased by 10 since 2014 (Chart 12).

Nationwide, teenage drivers who died due to motor vehicle collisions decreased 6% from 2011 to 2012 (National Highway Traffic Safety Administration, 2014). According to NHTSA, national fatal teen motor vehicle collisions occur most frequently between 3 and 8 p.m. but remain high until midnight (National Highway Traffic Safety Administration, 2014). A NHTSA study reported that teenage drivers were 2.5 times more likely to engage in risky behaviors while driving with one passenger and 3 times more likely to participate in these activities with multiple passengers (Goodwin, Foss, & O'Brien, 2012). NHTSA data also shows that:

- 50% of teen drivers who died were not restrained;
- 35% of teen drivers were speeding at the time of the fatal crash;
- 27% of teen fatalities had positive blood alcohol concentrations;
- 20% of teens who died were driving with an invalid driver's license at the time of the crash; and
- 12% of teen drivers were distracted (e.g., by passengers, cell phone use, etc.) at the time of the crash.

DEATHS IN CHILDREN (AGE 0-17)

Child Maltreatment

Child Maltreatment highest among the youngest and most vulnerable

Young children and infants who die as result of child maltreatment, including those who die from neglect and physical abuse, are homicide deaths. However, neither child maltreatment nor homicide is typically entered as the cause of death on the death certificate because investigations necessary to make those determinations have not been completed at the time the death certificate is filed. As a result, these deaths are often submitted as “undetermined” or “assault by unspecified means” for the official cause on the death certificate. Child deaths that have fractures or a constellation of symptoms may only have those symptoms listed on the certificate and may not be listed in the vital statistics files as a child maltreatment death even though the trauma was caused from abuse. Making a determination that child maltreatment or homicide was involved in a fatality requires a collaborative effort from the coroner’s office, law enforcement, and the Department for Community Based Services (DCBS). The data in this section represents data as collected by DCBS on deaths from child abuse. A more recent group making determinations on these deaths is the External Panel for the Review of Child Fatalities and Near Fatalities, housed in the Justice Cabinet, and their conclusions can be found in their annual report. The State Child Fatality Team is represented on this panel and coordinates the work of the two groups so that they will be complementary.

In Kentucky, child maltreatment deaths remain a major concern due to the violent nature of these deaths and the potential for prevention. In 2014, there were a total of 49 fatalities and near fatalities that were substantiated by DCBS child fatality and near fatality records (as of 7/6/2016); which is a 27% decrease from the DCBS fatalities and near fatalities reported for 2013. Neglect was a factor in 61% of the 49 cases and physical abuse in 39%. Twelve of the 49 cases resulted in a fatality. Of the 49 fatalities and near fatalities, 27% occurred among infants, 45% among 1 to 4 year olds, 16% among 5 to 9 year olds, 6% among 10 to 14 year olds, and 6% among 15 to 17 year olds. Sixty-three percent of these cases occurred among males. Abusive head trauma accounted for 16% of the 49 cases, which is nearly a 53% decrease from the number of abusive head trauma cases reported in 2013. Physical abuse accounted for an additional 18% of these cases. Over 60% of the 2014 DCBS cases had documented substance abuse.

The National Child Abuse and Neglect Data System (NCANDS) collects data on child fatalities that result from maltreatment nationally. In federal fiscal year (FFY) 2014, an estimated 1,546 children died of abuse and neglect in the United States (US Department of Health and Human Services Administration for Children and Families Administration on Children Youth and Families Childrens Bureau, 2016). NCANDS data reports that children under 3 years of age accounted for nearly 71% of all maltreatment deaths. Maltreatment deaths are highest within this age group because the youngest children are the most vulnerable due to dependency and small size.

DEATHS IN CHILDREN (AGE 1-17)

Homicides

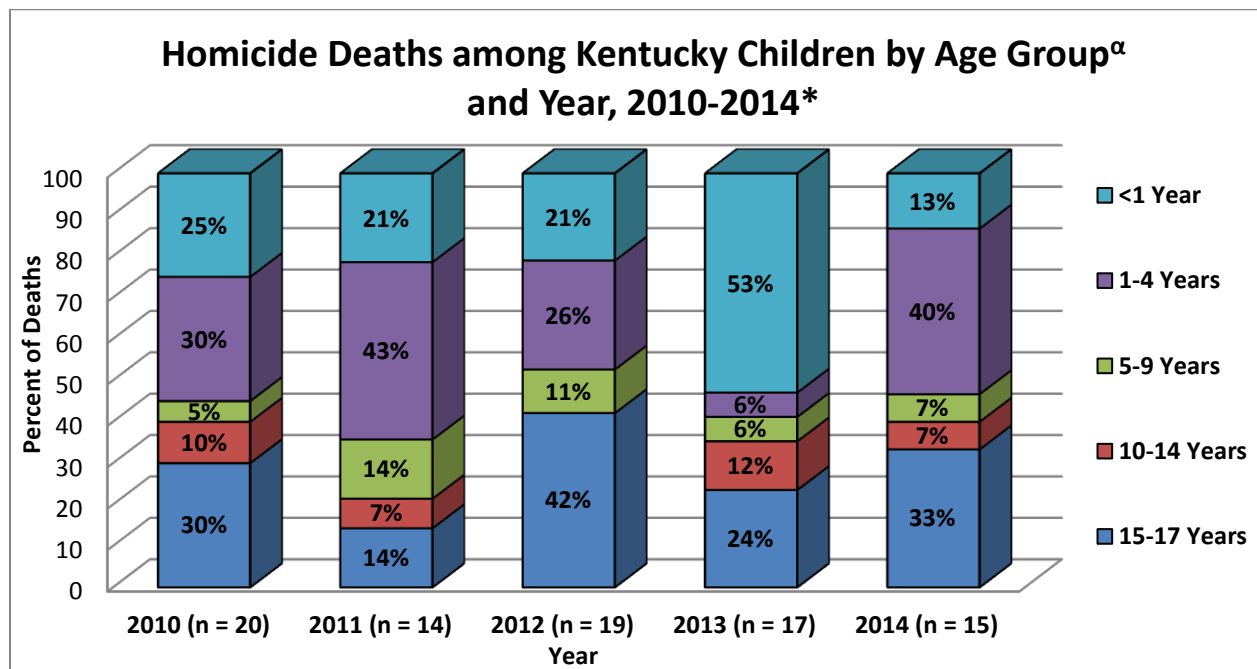
Homicide Data from Vital Statistics Files.

The homicide data below is collected by the Office of Vital Statistics. As with child maltreatment, many of these deaths are listed as undetermined on the death certificates. Homicide is often not identified on the death certificate as the cause of death due to on-going investigations. Some of these deaths could have pending law enforcement investigations and/or ongoing investigations from DCBS.

The percentages presented are based on small numbers and should be interpreted with caution. The numbers may be an underrepresentation because they are based solely on the primary cause of death codes (X85-Y09) on the death certificate. Some homicides may be identified under other causes (e.g., undetermined, poisoning, suffocation, etc.) because that is the primary cause of death on the death certificate. The State CFR program will investigate these deaths further.

The total number of homicide deaths has remained relatively consistent over time. However, the age group in which these homicides have occurred has fluctuated. In 2013, the largest proportion of homicides occurred among infants, while in 2014 the largest proportion occurred among children 1-4 years of age (Chart 13).

Chart 13



^a**Note:** There was no statistically significant difference in the percentage of deaths for each age group for 2014 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.**

***Note:** 2010-2014 data are preliminary and may change.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014.

DEATHS IN CHILDREN (AGE 1-17)

Homicides

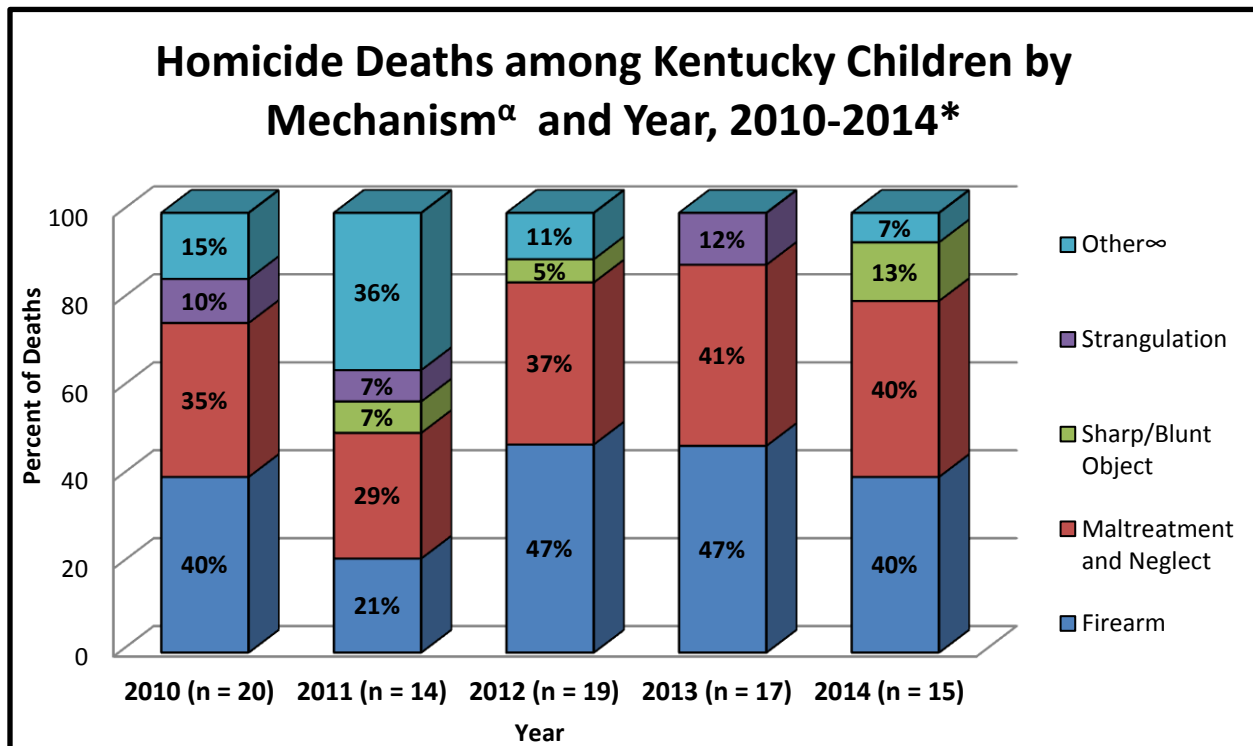
The Office of Juvenile Justice and Delinquency Prevention (OJJDP) reported that homicide is most common among the oldest and youngest children. In 2012 (latest data available), 40% of juvenile homicide victims nationally were five and under, and 42% were between ages 15-17 (Office of Juvenile Justice and Delinquency Prevention, 2014). A substantially larger proportion of victims age five and under were killed by family members than victims ages 15-17 (54% vs. 4%). Nationally, firearms were used in 81% of the homicides of juveniles ages 12-17 in 2012 and the homicide rate for black children was nearly five times the white rate, a disparity that was seen across all victim age groups (Sickmund, 2014). The disparity gap for homicide rates between black children and white children increased as the age of the victim increased (Sickmund, 2014).

The CDC recommends continual use of evidence-based, primary prevention strategies to stop youth violence. Utilizing the public health sector to reach the highest-risk youths with effective evidence-based prevention strategies is particularly critical to reduce the number of juvenile homicides, both nationally and statewide (David-Ferdon C & Simon T.R., 2014).

Mechanism Used in Child Homicide

Chart 14 illustrates the mechanism used in homicides of Kentucky children. For 2014, 40% of the homicide deaths among children were the result of a firearm, and child maltreatment accounted for an additional 40% of these deaths. Nationally, the majority of juvenile (12-17 years of age) homicides occur by the use of a firearm (Office of Juvenile Justice and Delinquency Prevention, 2014). Firearm deaths are potentially preventable by educating families and children about gun safety.

Chart 14



^a**Note:** There was no statistically significant difference in the percentage of deaths for each mechanism category for 2014 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.**

^{*}**Note:** 2010-2014 data are preliminary and may change.

^b**Note:** Other category includes homicides in which the mechanism was unspecified, poisonings, and vehicular homicides.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014.

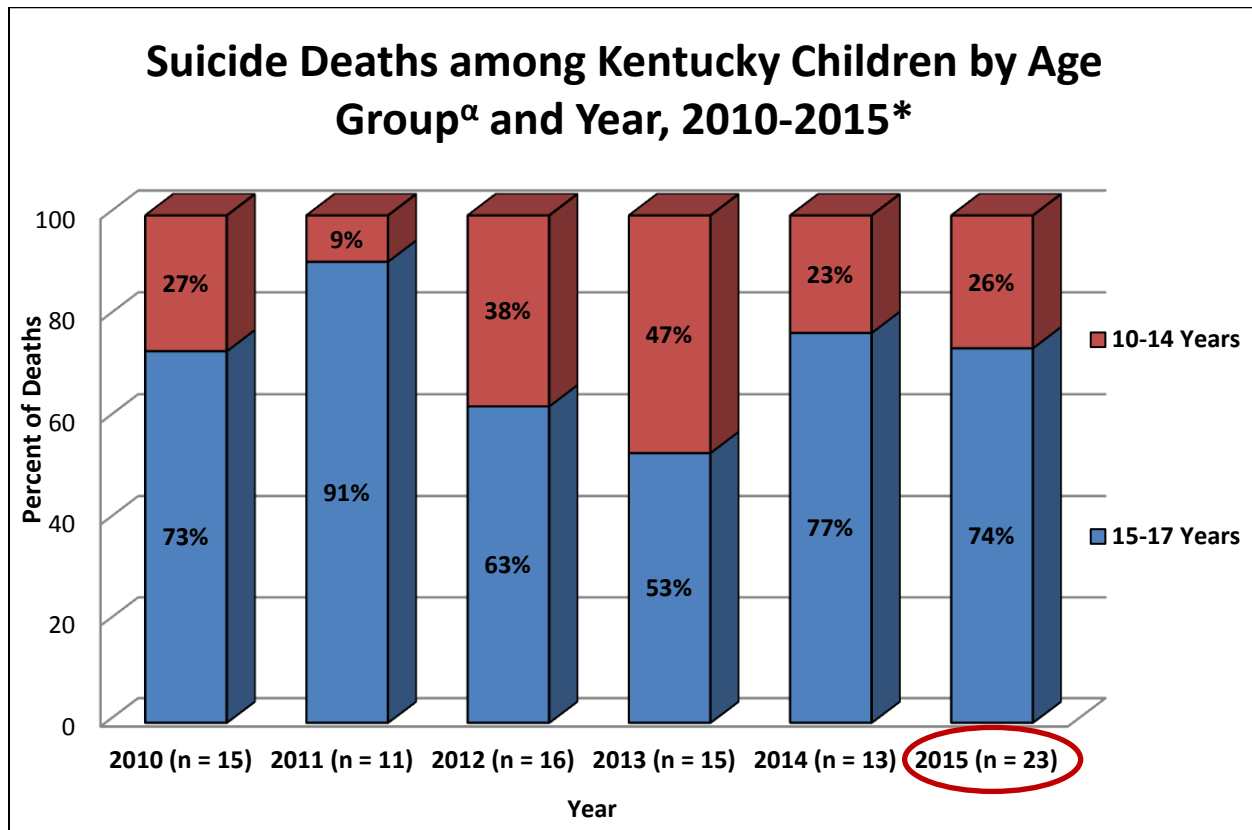
DEATHS IN CHILDREN (AGE 10-17)

Suicide

Suicide

Nationally, suicide is the third leading cause of death for youth ages 10 – 24 (Centers for Disease Control and Prevention, 2015). In Kentucky, suicide has consistently been the second leading cause of injury related death among 15 -17 year olds and the fourth leading cause of death for children 10–14 years of age. The number of youth who ended their own lives nearly doubled from 13 in 2014, to 23 in 2015 (Chart 15). This increase warrants immediate prevention activities for families and schools with pre-teens.

Chart 15



^a**Note:** There was no statistically significant difference in the percentage of deaths for each age group for 2015 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.**

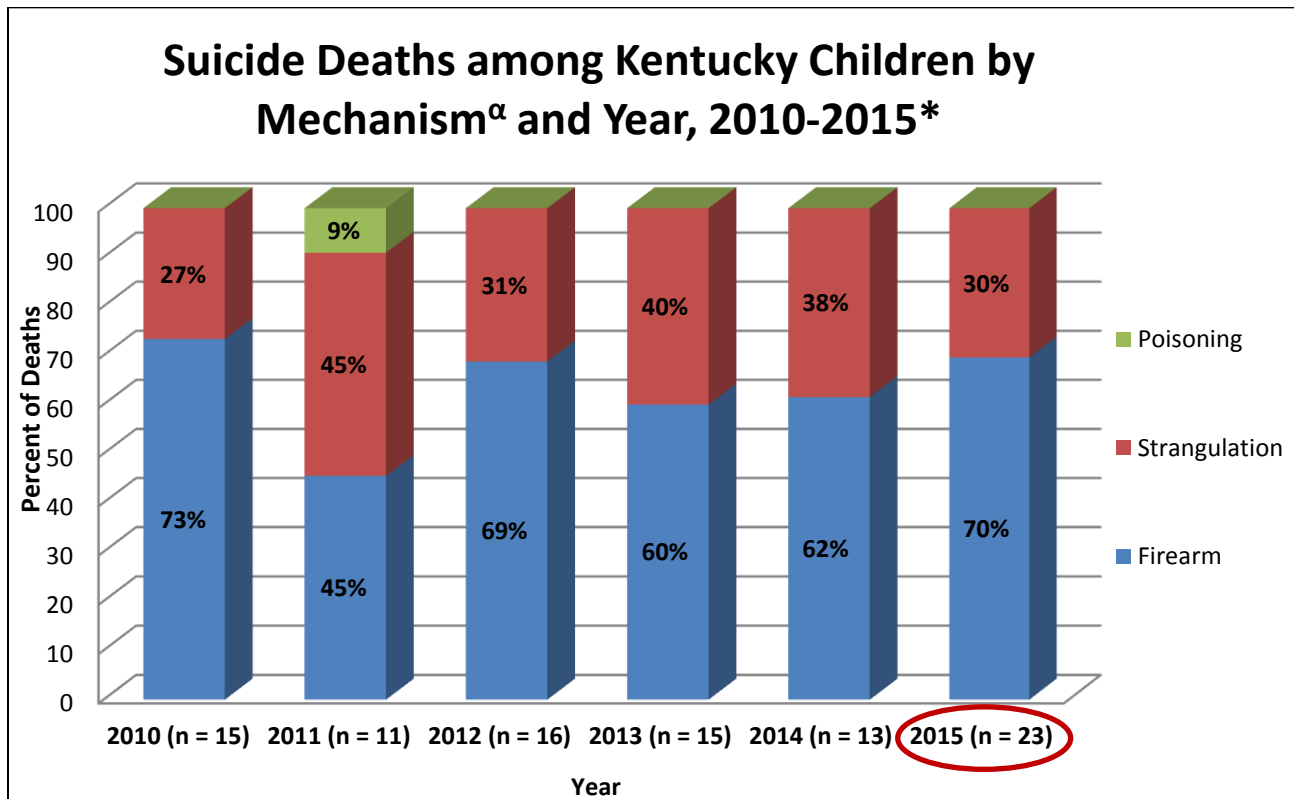
***Note:** 2010-2015 data are preliminary and may change.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2015.

According to a 2014 report by the Web-based Injury Statistics Query and Reporting System (WISQARS), between 2012 and 2014 there were 61 documented suicide deaths in the 9-18 age group in Kentucky. Mental illness stood out as the most frequent circumstance for death by suicide, followed by relationship and school problems.

Nationally, firearms are the most common method of suicide among males (56.9%), while poisoning is the leading method for females (34.8%) (Centers for Disease Control and Prevention, 2015). For many years, the most frequent method of Kentucky youth suicides was either by guns or hanging, with most years reflecting more use of guns. There was a slight increase in gun deaths from 62% in 2014 to 70% in 2015 (Chart 16). From 2012–2015, 66% of Kentucky youth suicides involved guns, which suggests that making gun access more difficult might be a prevention strategy for some cases of suicide. In contrast to the nation, Kentucky has never had poisoning/overdose as a major youth suicide issue. Despite the exploding heroin and opiate overdose deaths among Kentuckians, from 2012–2015, there were no reported teen overdose (poisoning) fatalities.

Chart 16



^a **Note:** There was no statistically significant difference in the percentage of deaths by mechanism for 2015 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.**

***Note:** 2010-2015 data are preliminary and may change.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2015.

DEATHS IN CHILDREN (AGE 10-17)

Suicide

Some of the known risk factors for suicide include history of previous attempts of suicide, family history of suicide, depression and/or other mental illness, substance misuse, stressful life event, easy access to lethal methods, and incarceration (Centers for Disease Control and Prevention, 2016). Children in the juvenile justice system and those in foster care are at increased risk (Pecora, 2009; Pilowsky & Wu, 2006).

In 2014, the CDC reported that youth who report frequently bullying others, and youth who report being frequently bullied are both at increased risk for suicide-related behavior. The Substance Abuse and Mental Health Services Administration (SAMHSA) recently cautioned about the growing concern that bullying was overshadowing the role of other factors in suicide and emphasized the need to consider other mental health issues as well. CDC research indicated that linking suicide with bullying as a direct cause and effect minimized other possible issues that may lead to suicide such as depression, substance misuse, problems at home, and trauma history. The CDC suggests utilizing a more integrated approach for prevention of suicide and youth violence with a focus on shared risk and protective factors such as individual coping skills, family and school social support, and supportive school environments (CDC, 2015).

During the 2014-2015 school year in Kentucky, there were 18,842 reported incidents of bullying or harassment, a reduction of 7% from the 20,172 incidents reported in the 2013–2014 school year (Kentucky Department of Education, 2015). Recognizing that bullying is a serious health and safety issue in the Commonwealth, the Kentucky Youth Bullying Prevention Task Force was established by Executive Order in September 2014 to study bullying in schools and recommend practices and policies to help provide safer, harassment free schools. In October 2015, the Task Force issued its final report, concluding that bullying is a community-wide public health issue, rather than a school specific issue, and recommended that the Commonwealth use a public health approach to address the problem.

Suicide and self-harm related questions were added to the 2014 Kentucky Incentives for Prevention (KIP) Survey on statewide trends related to substance abuse, school safety, and gambling conducted by the Department for Behavioral Health, Developmental and Intellectual Disabilities. School districts use the results of the survey for prevention activities, grant writing, and program planning. By grade 10, one in five Kentucky students self-reported having purposely cut or harmed themselves (Table 5). Community agencies, mental health providers, schools, and health care providers use the KIP survey to propose and develop programs for children affected by school safety and high risk behaviors.

Table 5

2014 Kentucky Incentives for Prevention Self-harm and Suicide Attempt Survey Results				
	Grade 6	Grade 8	Grade 10	Grade 12
Have you ever cut or harmed yourself on purpose?	8.6%	17%	20.2%	16.4%
During the past 12 months, did you ever seriously consider attempting suicide?	5.8%	13.1%	15.3%	11.7%
During the past 12 months, did you make a plan about how you would attempt suicide?	4.2%	10.4%	12.5%	9.4%
During the past 12 months, how many times did you actually attempt suicide? (**Percent that answered at least one time).	**3.8%	**7.8%	**8%	**5.3%

Data Source: 2014 Kentucky Incentives for Prevention (KIP) Survey.

Suicide is a very complicated issue, particularly when involving children. Suicide prevention involves not just the parents or the school officials but all those in the community that have potential contact with an at-risk child.

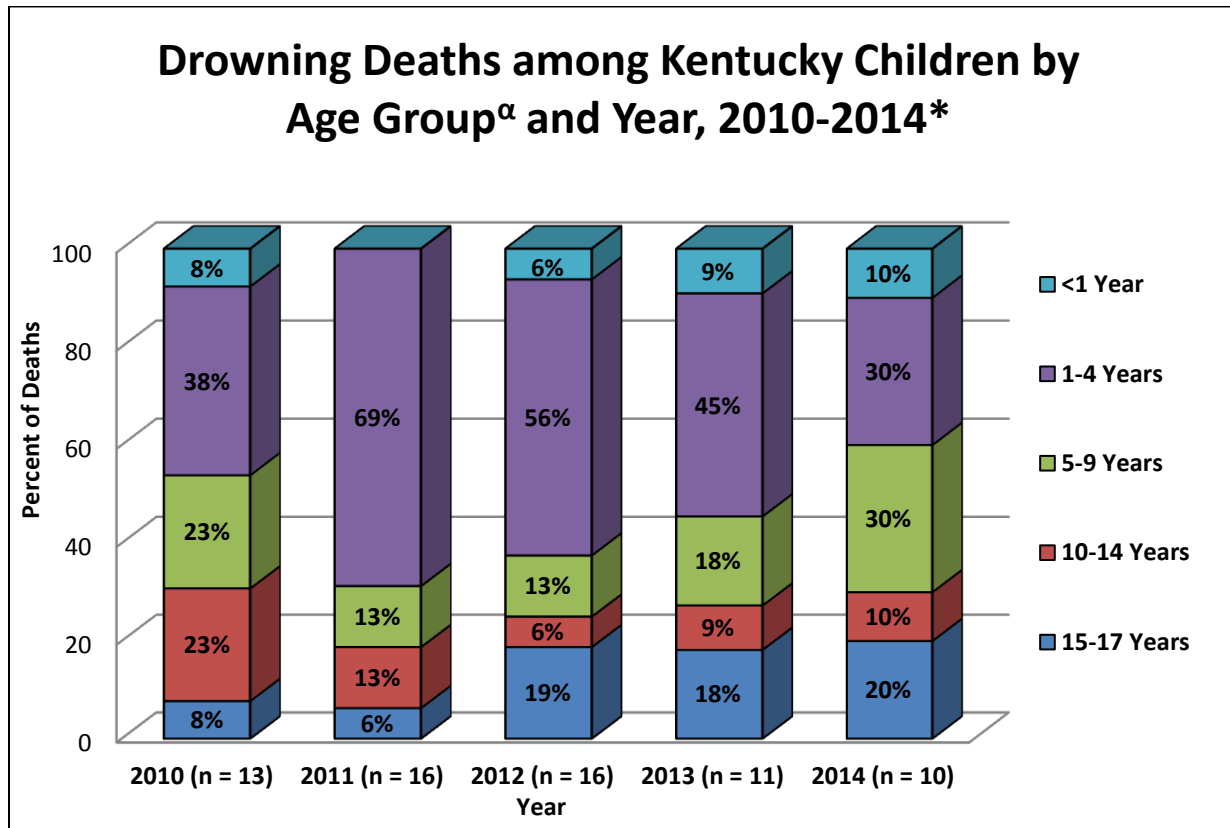
DEATHS IN CHILDREN (AGE 1-17)

Drowning

Drowning Deaths are Highest Among Children Aged 1-4 Years

In 2014, there were 10 Kentucky children who died from drowning. While drowning deaths have decreased since 2012, they have not shown any significant difference from year to year. Children between the ages of 1-4 accounted for 30% of the drownings that occurred in 2014 (Chart 17). In fact, from 2010-2014 drowning deaths occurred at a higher rate among Kentucky children aged 1-4 years than any other child age group. The most common factors contributing to drowning deaths are lack of supervision, lack of physical safety barriers, and inability of a child to swim (Safe Kids Worldwide, 2013c).

Chart 17



^a**Note:** There was no statistically significant difference in the percentage of deaths by age group for 2014 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.**

***Note:** 2010-2014 data are preliminary and may change.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014.

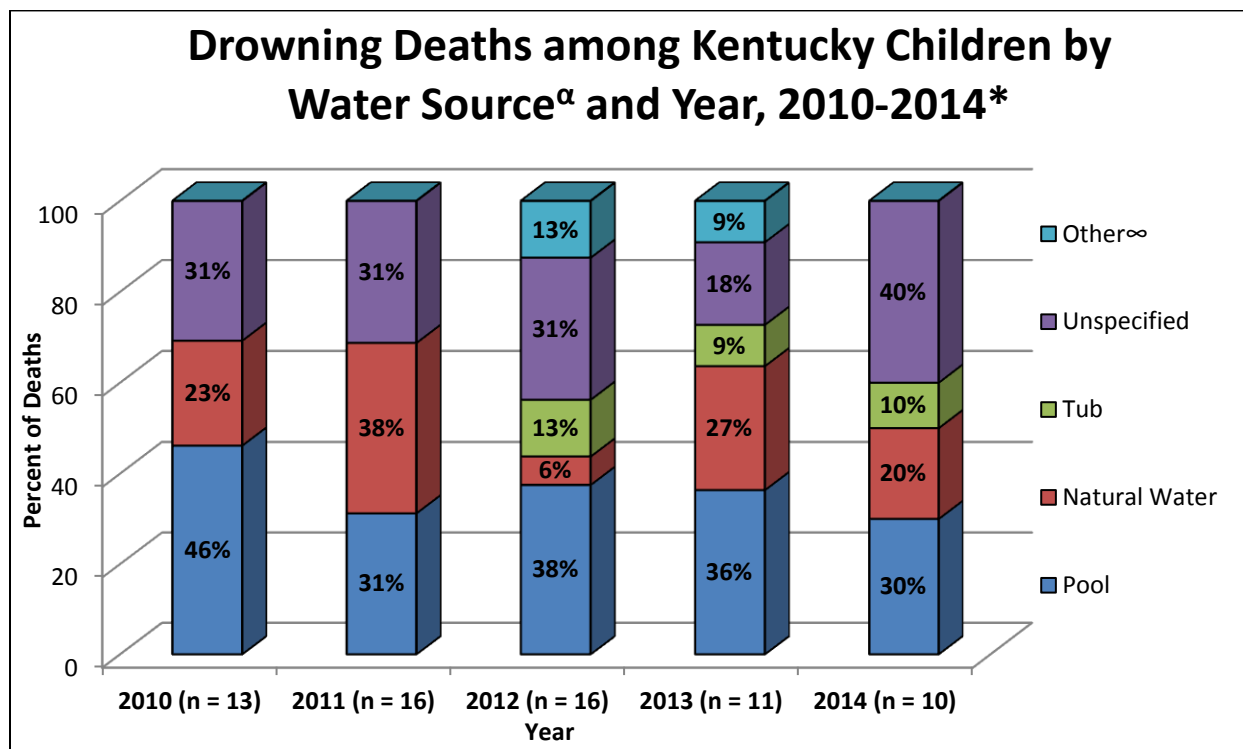
DEATHS IN CHILDREN (AGE 1-17)

Drowning

In 2014, the largest proportion (30%) of the drowning deaths that were specified in Kentucky took place in a pool (Chart 18). Of note, the deaths related to pools commonly occurred at the child's residence or some other residence and not in public pools. Nationally, children aged 1-4 years were more likely to drown in a swimming pool than any other water source (Xu, 2014).

As expected, the majority of drowning deaths in Kentucky occur during the summer months (May, June, July, and August). Prevention initiatives should start before this peak season for swimming, boating, and other water-related activities.

Chart 18



^a**Note:** There was no statistically significant difference in the percentage of deaths by water source for 2014 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.**

***Note:** 2010-2014 data are preliminary and may change.

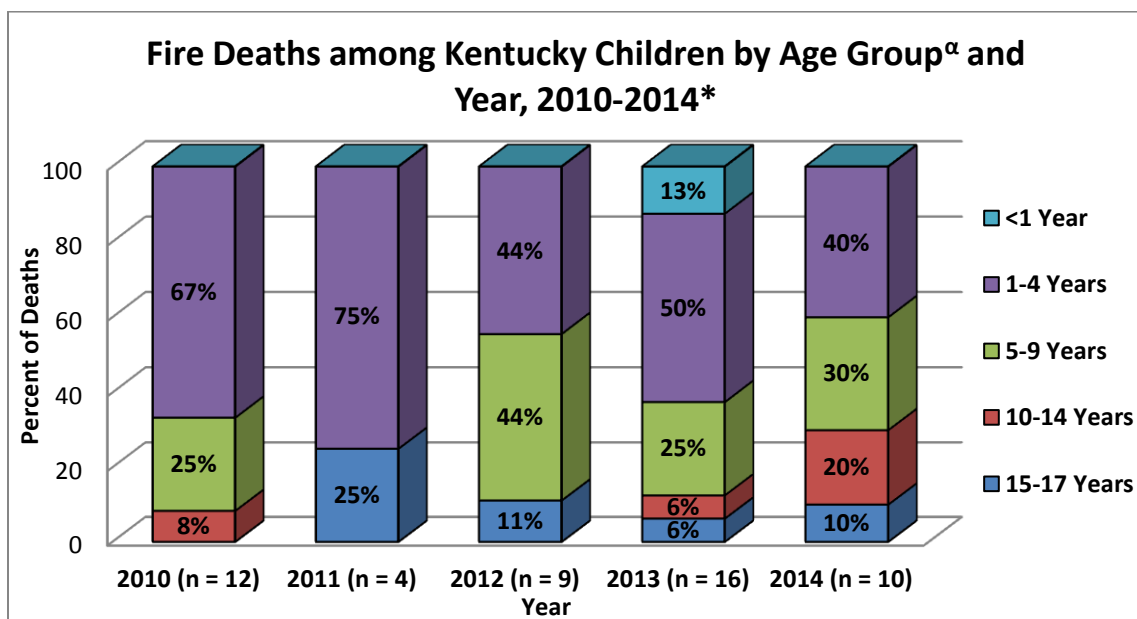
^a**Note:** Other category includes drownings of undetermined intent.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014.

Child Deaths from Fires

In an evaluation of the data for 2014, there was a decrease in fire deaths among Kentucky children. The majority (70%) of the children who died due to fire in 2014 were ages nine and younger (Chart 19). For 2010-2014, the highest proportion of fire deaths occurred among 1-4 year olds. Three house fires in 2014 were responsible for the deaths of 10 Kentucky children, eight of whom died in a single fire. The pediatric fire death increase in 2013 sparked fears of a trend towards rising rates rather than an episodic spike. However, that rise did not continue in 2014. Winter 2014 was a continuation of the fall 2013 trend of night time heating/bedding related fires that killed multiple family members. Because so many children who died in 2014 were members of the same family, the ages of children killed were more evenly distributed from early childhood through teens, unlike the normal preponderance of preschool children. Working smoke alarms were not found at any of the three house fires in which children were killed, suggesting a continuing opportunity to improve fire safety in Kentucky.

Chart 19



^aNote: There was no statistically significant difference in the percentage of deaths by age group for 2014 compared to previous years. Data based on 20 or fewer deaths **ARE NOT STATISTICALLY VALID FOR INTERVENTION PLANNING.**

Note: 2010-2014 data are preliminary and may change.

Data Source: Kentucky Vital Statistics, Death Certificate Files 2010-2014.

Nationally, 47% of children who die from fires or burns are ages four and under (Centers for Disease Control and Prevention National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS), 2014). Every day in the U.S., at least one child dies from a home fire, and approximately 16 children are injured from fires or burns every hour (Safe Kids Worldwide, 2013a). Over half (87%) of all fire-related deaths nationally are due to home fires, which spread rapidly and can leave families as little as two minutes to escape once an alarm sounds (Safe Kids Worldwide, 2015).

Cooking equipment is the leading cause of home fires and home fire injuries. Most deadly fires occur at night (Ahrens, 2013). Risk factors for fire death include malfunctioning or absent smoke alarms, living in poverty, and residence in rural areas (Ahrens, 2014).

Nationally, more than one-third (37%) of home structure fire deaths and 29% of home fires occurred during the winter months of December, January, and February (Ahrens, 2014).

DEATHS IN CHILDREN (1-17)

Fires

Prevention efforts in Kentucky should continue to include educating parents and caretakers on fire prevention, detection, and escape. Historically, fire prevention has consisted of keeping smoking materials out of the hands of children, not smoking in bed, taking care to place ashes from fireplaces or wood stoves in a fire-proof container until they are cool, watching food while cooking, not overloading electrical circuits and extension cords, and improving and enforcing electrical code. The Kentucky Injury Prevention Research Center (KIPRC) and the State Fire Marshall's Office offer additional points to consider for prevention:

- 1) Smoke detectors are a proven way to prevent some fire deaths. Communities can develop efforts to install smoke detectors in houses that do not have them and ensure that batteries are changed at least annually in houses with smoke detectors.
- 2) Help health departments, social services, and medical providers educate large families or families living in crowded housing to be especially careful about bedding near any heat source, such as a space heater, baseboard heater, or wood stove.
- 3) Assist families to understand and develop a family-specific fire safety plan that includes deciding which adult will find and exit with which child or dependent elders and where outside the house the family will gather.
- 4) Families should be provided with education and warnings on flammable materials, such as pesticides, many aerosols, and cleaning liquids that could be potential fire hazards, particularly if the product becomes soaked into carpets, walls, or upholstered furniture.

For 20 years KIPRC has led CDC and FEMA funded statewide home fire safety education/ smoke alarm installation programs with rural fire departments. In an effort to respond to the fires of 2013 and 2014 and to put into action the above recommendations, a partnership involving KIPRC and Estill County received a new school fire education curriculum/home fire safety education/ free smoke alarm installation grant from FEMA/Michigan Public Health Institute/Injury Free Coalition for Kids. Through this grant in 2015, all 2nd grade students in Estill County received fire prevention and escape education and more than 1,000 free smoke alarms were installed in Estill County with home fire safety visits by fire department volunteers. More than half of the homes visited did not have a working smoke alarm, enhancing the increased fire risk in Kentucky and the importance of these efforts.

PREVENTION EFFORTS

Examples of Prevention Efforts

A review of child deaths, both at the local and state level, is intended to advance knowledge of how these deaths occurred and determine what can be learned to prevent future child deaths. Everyone has a role in preventing these deaths and providing a safe and healthy environment in which Kentucky's children can grow and thrive. The following are some examples of actions taken around the state to prevent child deaths.

Infant Mortality Prevention - Prematurity

- Kentucky's Healthy Babies are Worth the Wait program (HBWW) is a best practice in Maternal and Child Health. HBWW began as a pilot project in Kentucky in 2007 and has been adopted by the March of Dimes as a signature program, resulting in nine sites across Kentucky and replication in other states. These efforts help prevent prematurity and reduce early elective deliveries (delivery before 39 weeks gestation without a medical indication). The March of Dimes collaborates in this effort with the Kentucky Department for Public Health, the Kentucky Hospital Association, and the Kentucky Perinatal Association. While making progress, the Commonwealth still has higher rates of prematurity and early elective delivery than the national average. For more information, see www.prematurityprevention.org or www.marchofdimes.com.
- Kentucky participates in the National Collaborative Improvement and Innovation Network (CoIIN) to reduce infant mortality. Strategies including addressing social determinants of health, reductions in preterm and early term births, and safe sleep/reducing Sudden Infant Death Syndrome. The collaboration has allowed Kentucky to participate with other states and share ideas and strategies. As part of the Safe Sleep CoIIN, a multidisciplinary Task Force was assembled to provide guidance for the development of the Safe Sleep Kentucky campaign.
- Text4baby is a free text messaging program that provides health messages during the prenatal and postpartum period, including messages focused on preterm birth prevention, maternal and infant nutrition, and safe sleep. The service is provided through a partnership of the National Healthy Mothers, Healthy Babies Coalition (HMHB), the Department of Health and Human Services, and the White House Office of Science and Technology Policy. The Kentucky Department for Public Health is a national partner of Text4baby and promotes this program through local health departments (LHDs) and healthcare providers.

Infant Mortality Prevention - Sleep-related Infant Deaths

- The most concerning trend in infant mortality data is the rise in sleep-related infant deaths, many of which are preventable. The number of sleep-related infant deaths is nearly equal to the number of infant deaths each year from prematurity. The Kentucky Department for Public Health, with numerous partners, implemented a Safe Sleep Campaign statewide in October 2015 in an effort to reduce these preventable deaths. The campaign focuses on the ABC's of safe sleep:

Babies less than a year of age should sleep **ALONE**; on their **BACK**; and in a clean, clear **CRIB**.

- In addition, Kentucky's External Panel for the Review of Child Fatalities and Near Fatalities has seen disturbing cases of sleep-related infant deaths in which the caregiver is impaired from substance abuse. As a result, the caregiver may put the baby in bed with them, markedly increasing the risk of overlay and suffocation of the infant. The Safe Sleep Campaign has also addressed this issue in Kentucky.

PREVENTION EFFORTS

Examples of Prevention Efforts

- Kentucky LHD's are implementing Safe Sleep improvement projects to reduce infant mortality from unsafe sleep practices by educating community agencies that provide childcare, parent classes, or work with their hospitals to assure the newest information on safe sleep is given to parents and caregivers. Last year they reported working with over 400 community partners across the state.
- Hospitals are being encouraged to model safe sleep practices and become certified by the National Safe Sleep Hospital Certification Program. Implementing policies for safe sleep in hospital nurseries and neonatal intensive care units (NICUs) leads to a dramatic increase in safe sleep practices among parents. Materials, including sample policies, are free and available at www.cribsforkids.org.
- Free materials anyone can use to promote safe infant sleep are available at: www.safesleepky.org.
- The Daviess County Health Department provided SIDS Awareness for the community during the month of October 2015. An article in the local newspaper, the Messenger-Inquirer, provided caregivers important information regarding Safe Sleep for Infants.

SUID Case Registry Grant

- In 2015 Kentucky became one of 14 states that was awarded a CDC grant that funds a state SUID Case Registry in order to better understand sudden unexpected infant death. There are four main goals for this grant:
 - 1) Identify all Kentucky resident unexpected infant death cases;
 - 2) Conduct a multidisciplinary review of all identified cases;
 - 3) Collect consistent data elements on every case; and
 - 4) Utilize SUID data to inform data-driven policy development and procedural best practices.
- One core feature of the case registry work plan in Kentucky was the formation of a state SUID Case Review Team. This team was charged with developing a comprehensive protocol to review all SUID cases and identify potential prevention strategies. For 2016, 23 cases have been reviewed by the state team and 12 cases have been reviewed locally.
- The State Team has identified three areas of focus for the upcoming grant year:
 - 1.) **Notification**: In 35% of cases, the coroner did not notify the DCBS or the local health department of the infant death. The SUID team will work with the Coroner's Association to reduce instances where coroners fail to notify local health departments and DCBS as required by KRS 72.410.
 - 2.) **Documentation**: In over half of the cases, a current version of the SUID Investigation Reporting Form was not completed. In order to complete the autopsy, medical examiners need this information. To facilitate completion of the correct form, the SUID team will work with the Coroner's Association to post the current version on their website.
 - 3.) **Education**: In every case reviewed by the State SUID team, safe sleep risk factors were present. The State SUID team encourages:
 - a.) All birthing hospitals to implement a safe sleep program and to apply for National Safe Sleep Hospital Certification and;
 - b.) All practitioners seeing infants to provide information about safe sleep to parents, including a discussion about where the infant is going to sleep.

PREVENTION EFFORTS

Examples of Prevention Efforts

What does Safe Sleep Look Like?

The “Back to Sleep” campaign, which began in 1992, has been successful in reducing infant deaths contributed to unsafe sleeping by more than 50% since its introduction (National Institute of Child Health and Human Development, 2015). As a result of new scientific research, the American Academy of Pediatrics (AAP) guidelines were revised and broadened in 2011 to become the “Safe to Sleep” program (Moon, 2011; Task Force on Sudden Infant Death Syndrome, 2005).

The AAP currently recommends (Moon, 2011):

- Infants should always be placed on their backs; in their own bed; on a firm sleep surface; and without pillows, comforters, or other soft surfaces. [**A**=alone, **B**=on their Back, **C**=in their own crib (includes bassinette or play yard);
- Keep the infant’s crib, bassinet, or play yard free of soft objects, toys, and loose bedding. Bumper pads, quilts, blankets, and pillows are potential hazards for the infant;
- Smoking is a common risk factor found in deaths occurring during sleep. There should be no smoking during or after pregnancy, and there should be no smoking around the infant;
- Room sharing with the infant is appropriate but do not share the bed. Infants should be alone in a crib, bassinet, or play yard;
- Breastfeeding has many benefits to both the mother and infant and can reduce the risk of SIDS but always place the infant back in a safe sleep environment;
- Consider giving the infant a clean, dry pacifier when placing the infant down to sleep. There is no need to replace it during sleep if the pacifier falls out;
- Do not let the infant overheat; and
- Avoid products that claim to reduce the chance of SIDS as most have not been tested for safety. Home monitors do *not* reduce the risk of SIDS and should not be used for that purpose.

The new Safe to Sleep materials, endorsed by the AAP, are available at no cost from the National Institute of Child Health and Human Development (NICHD) at <http://www.nichd.nih.gov/sts>.



In Kentucky, prevention efforts include educating families, caregivers, and childcare providers on the AAP recommendations; having hospitals and child care agencies model safe sleep practices; and promoting the “Safe to Sleep” program to anyone caring for an infant, even if they only have the infant for short periods. Kentucky specific information can be found at www.safesleepky.org.

PREVENTION EFFORTS

Examples of Prevention Efforts

Motor Vehicle Death Prevention

- The Lexington-Fayette County Health Department and CFR team shared with the media the importance of never leaving children unattended in a vehicle. A child's body temperature can increase three to five times faster than an adult, and a car can reach an internal temperature of 110 degrees even when the outside temperature is in the 60's. Kentucky has passed a "Look Before You Lock" law that allows people to rescue children trapped in cars without prosecution.
- In Kentucky, much of the transportation provided by day care centers (especially those serving low-income families) occurs in 15-passenger vans. In 2016, a child died from hyperthermia after being left in a child care van. Efforts to promote "Look before you lock" were revitalized and pushed out through local health departments to prevent another such death.
- The Frankfort Police Department has collaborated with the Frankfort Kiwanis Club to provide car seats for children whose families may not be able to afford one. The goal is to help parents to comply with the car seat laws. The police department also provides car seat inspections for the safety of the children in the community.
- The Bracken County CFR Team collaborates with several other agencies to address child fatality in their community. One of the biggest events addresses car seat safety because child deaths due to motor vehicle collisions continue to be a concern. In collaboration with the local health department, schools, the local library, and Children's Hospital in Cincinnati, Donna Teegarden of the CFR Team provides training and car seat safety checks. Thus far, they have conducted five events with another scheduled before the end of 2016. On an ongoing basis, the CFR Team, in collaboration with the local health department, provides car seat checks and safety approved car seats to families in need. They are also preparing a permanent check point station for onsite car seat safety checks.
- Local health departments, law enforcement, and fire departments participate in conducting car seat checks for families across the state. Child passenger safety technicians have become certified in the installation of infant, child, and booster seats and show parents and caregivers the correct way to install the seats.

Child Maltreatment Prevention

The CDC recommends that communities approach child abuse prevention by seeking to create safe, stable, and nurturing relationships and environments. These are considered **Essentials for Childhood**: conditions necessary to assure children reach their full potential. In this approach, communities develop strategies to promote the types of relationships and environments that help children grow up to be healthy and productive citizens so that they, in turn, can build stronger and safer families and communities for their children (Centers for Disease Control and Prevention, 2014a). Kentucky engages in efforts to promote safe, stable, and nurturing environments and to better support families promoting school readiness and preventing child abuse and neglect. These include the Health Access Nurturing Development Services (HANDS) home visitation program and Kentucky Strengthening Families (KYSF). All families experience times of stress, and research demonstrates that children grow and learn best in families who have the support and skills to deal with such stress.

- KYSF represents a multi-disciplinary partnership of over 20 national, state, local, public, and private organizations dedicated to embedding six research-based Protective Factors into services and supports for children and their families. The Protective Factors lay the foundation for the Strengthening Families Framework. Protective factors are conditions in families and communities, which when present, help increase the health and well-being of families and children and reduce the risk of child abuse and neglect. The protective factors identified for Kentucky are: 1) Parental Resilience, 2) Social Connections, 3) Knowledge of Child Development, 4) Concrete Support in Times of Need, 5) Social and Emotional Competence of Children, and 6) Nurturing and Attachment. To learn more, please visit: <http://chfs.ky.gov/dph/mch/ecd/Kentucky+Strengthening+Families.htm>.
- Prevent Child Abuse Kentucky (PCAK, www.pcaky.org) provides prevention and awareness resources statewide throughout the year. The month of April, Child Abuse Prevention Month, is specifically designated as a time to focus on prevention awareness. PCAK coordinates and supports these awareness activities through local and statewide partnerships. In 2016, PCAK documented April awareness activities in all 120 Kentucky counties. At least 62 regional and local media outlets (newspaper, TV, etc.) provided coverage of Child Abuse Prevention Month events. These efforts involved support from statewide leaders such as the Governor and Kentucky Attorney General in addition to engagement of hundreds of local schools, local health departments, local elected officials, and child advocates.
- In 2016, there has been continued focus on reducing the occurrence of pediatric abusive head trauma (PAHT) in Kentucky. In FY 2016, PCAK distributed over 17,000 informational “*Never Shake a Baby*” brochures to hospitals, local health departments, and other child serving agencies. Kentucky partners are also working collaboratively to increase the number of birthing centers using evidence informed practices to educate the parents of newborns about the dangers of shaking and strategies to soothe an infant. This approach has been shown to reduce incidence of PAHT by 47% (Dias et al., 2005). These collaborative efforts included a letter to hospital administrators on the availability of resources to implement hospital-based parent education programs. This letter was signed by representatives from Kentucky DPH, PCAK, Kentucky Safety and Prevention Alignment Network (KSPAN)/KIPRC, Kosair Children’s Hospital, and UK Children’s Hospital. Subsequently, the Kentucky Child Fatality and Near Fatality External Review Panel sent a letter to all hospitals and birthing centers encouraging them to adopt this best practice. With support from PCAK and KSPAN, staff from the Children’s Hospital Foundation Office of Child Advocacy have begun providing training and technical assistance to hospitals across Kentucky. Resources provided to birthing centers include “Calm Baby Gently” board books, brochures/posters, parent education videos (Hope for Tomorrow and Period of PURPLE Crying), and a DVD player for patient use.

- The Kentucky Health Access Nurturing Development Services Program, (HANDS), provides home visits by family support workers and nurses or social workers to pregnant women and the family until the child turns two. Independent evaluations continue to show many health improvements for mother and baby as well as reductions in child maltreatment. Kentucky HANDS was recently acknowledged as an evidence-based model for home visiting, meaning that positive outcomes have been verified by academically stringent studies.
- In October 2015, the State CFR program sent letters to all Family Court and Drug Court Judges asking them to promote Safe Sleep and Abusive Head Trauma Prevention. Seven judges representing 11 counties responded and were sent a Safe Sleep video from National Institute on Child Health and Human Development (NICHD), the Kentucky “What Does a Safe Sleep Environment Look Like” handout, the video “The Period of PURPLE Crying,” the brochure “Never Shake a Baby” from Prevent Child Abuse Kentucky, as well as an attestation statement and guidance on how to implement the education.
- Through the MCH Title V program, nurses in local health departments educate parents and caregivers about Abusive Head Trauma. Using the Period Of PURPLE Crying program, parents are educated on ways to help soothe a crying baby as well as strategies to keep the baby safe when a caretaker gets frustrated such as allowing another caretaker to take the baby or placing the baby in its Safe Sleep Space and walking away for a few minutes.

Injury Prevention

- The Daviess County CFR team provided education to the community warning residents who have storage or toy chests of the dangers of suffocation after a child died in this manner. All chests should be able to be opened from the inside. It is recommended that people contact the manufacturer to see if they are offering replacement parts that allow the chest to be opened from the inside or remove the automatic latch and lock system from the chest.
- The Woodford County Health Department along with community partners such as law enforcement, fire, EMS, the local hospital, and schools sponsor a Safe Kids Fair. Written, as well as hands-on education materials, are provided to families with fun activities. Car seat checks are also provided.
- The Muhlenberg County Health Department, along with First Responders, came together in 2014 after a tragic fire killed a mother and eight children to raise awareness about fire safety and injury prevention. The first “Safety Awareness Day” was created in 2015 with the sole purpose of increasing safety awareness for everything from fire to bike safety. This is now an annual event.

Fire Prevention

- After the loss of a family of four in a house fire, the Bracken County CFR Team partnered with the local health department and fire department to promote and install smoke detectors in area homes. These smoke detectors are currently being promoted to home maker groups in the community.

PREVENTION EFFORTS
Examples of Prevention Efforts

Suicide Prevention

- Kentucky's Zero Suicide in Healthcare initiative is about organizations and systems working together to make suicide a "never event" in programs and systems of care that include emergency departments; medical-surgical units; primary care and general medical settings; behavioral health entities; crisis services; primary, secondary, and post-secondary education; justice systems; the workplaces; and others. Collaborating with community mental health centers, regional forums occurred across the Commonwealth to open dialogue within and across various systems of care regarding continuity of care, increasing awareness and knowledge of suicide prevention, informing clinical practices, and ultimately saving lives.
- Many programs and initiatives are underway in Kentucky to address youth suicide. These efforts focus on utilizing the strategic prevention framework and collaborative systems of care approaches to assess needs and build capacity to meet the needs of at-risk youth at whichever point they enter the system. Points of entry include schools, mental health providers, health care providers, or other community agencies. Communities should support schools screening for mental health issues in children.

RECOMMENDATIONS

Based on a review of child fatality data for 2014 and related trend data, the State Child Fatality Review Team makes the following recommendations for the prevention of child deaths in Kentucky.

Recommendation # 1 - Safe Sleep: As reported, sleep-related deaths are a leading cause of infant deaths. Recommendations for the prevention of sleep-related deaths are as follows:

- Birthing hospitals should participate in the Cribs for Kids® National Safe Sleep Hospital Certification program, which recognizes hospitals that demonstrate a commitment to reducing infant sleep-related deaths by promoting best safe sleep practices and by educating on infant sleep safety. By becoming certified, a hospital has demonstrated that it is committed to being a community leader and is proactively eliminating as many sleep-related deaths as possible. See more at: <http://www.cribsforkids.org/hospitalinitiative/>
- Healthcare providers, childcare providers, and other community organizations should provide the most current, and evidence-based Safe Sleep materials free of charge, which can be accessed from the Eunice Kennedy Shriver National Institute of Child Health and Human Development. These materials can be used to educate communities and families about safe sleep practices. <https://www.nichd.nih.gov/sts/Pages/default.aspx> or, www.safesleepky.org
- Health care providers who care for substance-exposed infants or infants diagnosed with Neonatal Abstinence Syndrome should encourage birthing facilities to develop opportunities for the mother-infant dyad to allow the mother to practice safe sleep and calming the infant (abusive head trauma prevention) in addition to assuring education is provided to these families. Providers and birthing facilities should assure the mother has a crib, pack-n-play, or bassinette for safe sleep and document where the infant will be sleeping after discharge. This should be asked again in follow-up visits after discharge.
- Childcare serving agencies, domestic violence shelters, and emergency shelters should have infant safe sleep policies that follow the national safe sleep practices recommended by the American Academy of Pediatrics.

Recommendation # 2 - Prematurity: In Kentucky, prematurity is the leading cause of infant deaths. Recommendations for the prevention of deaths due to prematurity related causes are as follows:

- Local health departments and communities should participate in the Healthy Babies are Worth the Wait Collaborative. Partners in the collaborative include the March of Dimes, state and local health departments, hospitals, and community organizations. Information and strategies to reduce preterm birth are shared among partners via conference calls and in-person meetings. For more information, or to join the Collaborative, please contact the Greater Kentucky Chapter of the March of Dimes at <http://www.marchofdimes.org/kentucky/>

Recommendation # 3 - Motor Vehicle Collisions: Motor vehicle collisions are the leading cause of injury related deaths for children ages 1-17 years. Proper use of child passenger safety restraints reduces the risk of death.

- Medical providers, community service providers, and labor/delivery units should offer parents materials and education on the National Highway Traffic Safety Administration and American Academy of Pediatrics recommendations for appropriate child passenger safety seats and booster seats. This includes recommendations for children to remain in a rear facing seat until he/she reaches the top height or weight limit allowed by the infant seat's manufacturer. Booster seat information should also be given to families indicating that booster seats should be used until your child can correctly fit in the adult lap and shoulder seat belts, typically when they are around 4 feet 9 inches in height and 8 to 12 years old. (<http://www.safecar.gov/>) ([How to Use a Booster Seat - HealthyChildren.org](http://www.HealthyChildren.org)).

RECOMMENDATIONS

Recommendation # 4 - Child Maltreatment Prevention: Child maltreatment is a serious and ongoing issue across the nation and younger children are particularly vulnerable and at risk for injuries and death. Recommendations for child maltreatment prevention are:

- All Kentucky birthing hospitals should implement an evidence-based parent training program for pediatric abusive head trauma prevention for families of newborns. These programs can be provided at no or low cost and have been proven to be effective in reducing the incidence of pediatric abusive head trauma in communities. Parents should be educated on acceptable and safe ways to deal with infant crying and ways to soothe a crying infant. Prevent Child Abuse Kentucky (www.pcaky.org) can provide materials and technical assistance.
- Parenting classes in communities, regardless of the agency providing the classes, should include education on the current national recommendations for safe sleep, pediatric abusive head trauma prevention, identification of child abuse, as well as basic childhood development.
- All Kentucky Family Courts and Drug Courts should implement safe sleep and abusive head trauma education for all of their clients. Families involved with these court systems are at a higher risk of an incident due to multiple stressors. Clients should be asked where any child under 1 year of age is sleeping and an evidence-based program should be utilized. These programs can be provided at no or low cost and have been proven to be effective in reducing the incidence of pediatric abusive head trauma in communities. Parents should be educated on acceptable and safe ways to deal with infant crying and ways to soothe a crying infant. Prevent Child Abuse Kentucky (www.pcaky.org) can provide materials and technical assistance.

Recommendation # 5 – Suicide Prevention: Teen suicide rates are not declining and the number of younger children committing suicide is increasing. There are many factors associated with teen suicide. It is imperative that parents, educators, and service providers from all systems of care that interact with children and youth are aware of the warning signs and are equipped to talk to children in crisis.

- Providers in both healthcare and behavioral healthcare should use the unique opportunities available to them to screen and assess for suicide risk and ensure that at-risk youth receive competent suicide treatment and management within and across systems of care (zerosuicide.com).
- School systems should have protocols for addressing suicide, which include evidence-based screening tools and resources. Middle schools should be included to target the younger children who are contemplating suicide. (Substance Abuse and Mental Health Services Administration. Preventing Suicide: A Toolkit for High Schools. HHS Publication NO. SMA-12-4669. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, 2012).
- Parents and caregivers who choose to have guns in the house should be encouraged to follow gun safety procedures at home, by keeping firearms locked up, with ammunition stored separately. They should also practice and model gun safety in front of children and use gun safety locks supplied by many local police and sheriff departments.

Recommendation # 6- Racial Disparity: In Kentucky, black infants continue to be more likely to die than white infants. Black children, particularly ones in the teenage years, are more likely to die from homicide than white children.

- Education, outreach, and prevention programs should be targeted to at-risk populations using evidence-based programs and techniques including reducing existing barriers which restrict at-risk families from receiving appropriate services or education opportunities. These barriers include transportation issues, lack of extended office/agency hours, and non-culturally sensitive programs. Agencies should partner and engage faith based agencies/groups to assist in providing outreach activities for these at-risk families and children.

RESOURCES

Free Trainings offered for Injury Prevention:

Continuing Education Program on Sudden Infant Death Syndrome (SIDS) Risk Reduction

The *Eunice Kennedy Shriver* National Institute of Child Health and Human Development and its partners developed a FREE continuing education (CE) program on SIDS risk reduction for nurses available at <http://www.nichd.nih.gov/SIDS/Pages/sidsnursesce.aspx>

Pharmacists can access this free continuing education (CE) activity, developed by the NICHD and its pharmacist partners, which explains the latest research on SIDS and SIDS risk reduction and outlines how pharmacists can help spread safe sleep messages to parents and caregivers in just a few minutes. <https://www.nichd.nih.gov/news/resources/spotlight/Pages/080911-education-activity-pharmacists.aspx>

Child care providers can access a free training on safe sleep developed by Healthy Child Care America at <http://www.healthychildcare.org/PDF/SIDSAccessFlyer.pdf> use promotional code **SIDSCCP**.

Pediatric Abusive Head Training (Meets Kentucky State law requirements) and Child Maltreatment

Free 1 hour training on pediatric abusive head trauma (PAHT) training for physicians is offered at <http://www.nortonhealthcare.com/pediatric-abusive-head-trauma>.

Free online training for healthcare/other child care providers for PAHT, titled “Understanding Abusive Head Trauma”, course ID number 1029168 can be accessed at <https://ky.train.org>.

DEFINITION OF TERMS

Cause of Death – Event that causes a physical problem, no matter how brief or prolonged, that leads to a child's death. Categories for cause of death are injury deaths and non-injury deaths:

1. Injury Deaths – more likely to be preventable than non-injury deaths, including but not limited to: suffocation, poisoning, drowning, fire, child abuse, suicide, homicide, and vehicular collisions.

2. Non-Injury Deaths – deaths that are the result of natural processes such as disease, prematurity, or congenital anomalies (birth defects).

Child – A person between 0 and 17 years of age (all references to “child” in this report specify which age group/range is being discussed).

Disparity – Term used to describe the difference or inequity between two groups.

Example: If the infant death rate was lower in white infants compared to the infant death rate in all other races, a racial disparity exists because one racial group (all other races) has a higher rate of infant death compared to another racial group (white infants).

Infant – A person under 1 year of age.

Infant Mortality – Death of an infant before his or her first birthday.

Infant Mortality Rate – Number of infant deaths per 1,000 live births for a specified time period.

Rate – Measure that indicates how often an event is occurring during a certain time period; it is calculated by taking the count of an event during a specific time period and dividing this number by the population that is at risk for experiencing the event during the time period. Rates are often expressed in units of 10, such as per 100, per 1,000, or per 100,000.

Example: The infant death rate is expressed as the number of deaths that occurred among infants 1 to 364 days old who were born alive during a given year divided by the number of live births that occurred in the same year multiplied by 1,000. Therefore, if 200 infants died during 2011 and there were 16,000 live births during the same year, the infant death rate would be 12.5 deaths per 1,000 live births (calculated by taking 200 divided by 16,000 and multiplying by 1,000).

Sleep-Related Risk Factors – These factors are hazards which create an unsafe sleep space for an infant and should be avoided to reduce infant deaths: bed-sharing, use of sofa/couch or other surface not designed for infant sleep, soft bedding or presence of stuffed animals in sleep environment, use of an adult bed, and placed prone (on stomach) or side position; which can create an unsafe sleep environment.

Sudden Unexpected Infant Deaths (SUID) - defined as deaths in infants less than 1 year of age that occur suddenly and unexpectedly, and whose cause of death are not immediately obvious prior to investigation. SUID includes these categories:

1. Sudden Infant Death Syndrome (SIDS): a sudden, unexplained death of an infant less than 1 year old. It is a diagnosis of exclusion, meaning that after an extensive review of the infant's medical history, a complete autopsy, and a death scene investigation no cause can be identified.
2. Accidental Suffocation in bed: a result of another person lying on the baby, wedging of the baby, or the baby's face in a soft surface such as a pillow, blanket, or bumper pad.
3. Undetermined: there is no anatomic, toxicological or metabolic cause of death but there is other compelling information, investigative omission, or physical evidence that is concerning and suggests that death was not a natural death.

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